institute IMDEA networks

www.networks.imdea.org

annual report

2025

developing the science of networks

foreword

Albert Banchs
Director of the IMDEA Networks Institute

annual report 2023
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IMDEA Networks Institute stands as a premier research institute dedicated to the Science of Networks and Communication Technology. At the forefront of our mission is the pursuit of fundamental, systems-oriented networking research with a strong emphasis on technology transfer to industry and standard bodies. Our diverse team of researchers boasts expertise across a spectrum of topics including mobile networks, protocols, security, optimization, and machine learning, among others.

2025 has been a great year for IMDEA Networks. We have continued to publish in the most prestigious venues in our field and develop cutting-edge research projects. Our researchers are world-wide renowned technical leaders, highly cited and recipient of numerous awards. The standing of IMDEA Networks in the research community is reflected in the CS-rankings, where IMDEA Networks appears in the top three positions in Europe for two of its three research lines.

Among many other achievements, 2025 stands out for the activities of the institute in terms of research infrastructure and equipment. With initiatives such as SLICES, NEXTONIC and PIX-Europe, IMDEA Networks is deploying highly ambitious equipment and infrastructure that positions the institute in a unique position to conduct highly impactful experimental research. By offering our facilities to our academic and industrial collaborators, IMDEA Networks facilities are greatly strengthening Madrid's research community in the ICT domain.

Once again, my gratitude goes to the Regional Government of Madrid for its continued support of this economy transforming initiative, as well as to all those who are contributing to make this exciting project an international success.

annual report 2025

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editor
IMDEA Networks Institute

graphic design
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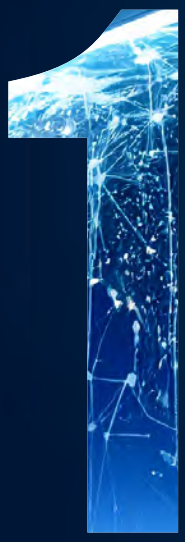
table of contents

executive summary



annual report

2025

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In 2025, IMDEA Networks continued to deliver high-impact research in networking, cybersecurity, privacy, artificial intelligence, and distributed systems. The institute combined strong scientific output with sustained growth in doctoral training, increased international recognition, active technology transfer, and significant contributions to public policy and industry. Research results influenced software vendors, standards discussions, regulators, and industrial partners, while new scientific initiatives and infrastructures further strengthened Madrid's position as a centre for advanced ICT research.

Training the Next Generation of Researchers

Developing highly skilled researchers remains one of IMDEA Networks' core contributions to the scientific and technological ecosystem. In 2025, the institute continued to expand its international doctoral programme, attracting 341 applications from 54 countries and selecting 11 PhD students, an acceptance rate of 3.2%, reflecting a highly selective recruitment process. The institute also achieved one of its strongest years in doctoral training, graduating a record number of PhD students and reinforcing its role as a producer of highly qualified talent for academia, industry, and the public sector. More than half of IMDEA Networks graduates traditionally remain in Spain, with a significant fraction continuing their careers in the Madrid region, contributing directly to the local innovation ecosystem. IMDEA Networks alumnus Aristide Tanyi-Jong Akem received the 2025 Best Doctoral Thesis Award from the IEEE Spain Signal Processing and Communications Joint Chapter Awards for his thesis on user-plane algorithms for programmable networks, supervised by Prof. Marco Fiore.

Excellence in Scientific Research

Scientific excellence continued to be reflected in both the quality and impact of IMDEA Networks' research output. In 2025, researchers published 99 scientific publications, maintaining a strong presence in the leading venues of computer networking, mobile systems, privacy, cybersecurity, and artificial intelligence. The institute also consolidated its position among Europe's leading research centres in networking, ranking second in Europe in Mobile Computing and among the top institutions in Measurement and Performance Analysis according to CSRankings. During the year, IMDEA Networks researchers produced 26 Q1 journal papers and 27 CORE A/A* conference papers, reflecting a continued emphasis on publishing in the most selective and influential venues in the field.

One of the year's most influential research results uncovered a previously unknown mechanism that allowed mobile applications to link web browsing activity with app identities through localhost communications. The work, conducted in collaboration with researchers from Radboud University and KU Leuven, showed how applications from Meta and Yandex bypassed browser isolation guarantees, enabling large-scale tracking of users across websites and mobile applications. Beyond its scientific contribution, the research triggered patches in major mobile browsers, contributed to the introduction of a new Android per-

mission mechanism, and informed ongoing standardisation efforts around Local Network Access (LNA) prompts in web browsers. The findings also informed discussions with regulators and policymakers in Europe and the United States, demonstrating how fundamental research can directly improve privacy protections for millions of users.

A second highlight was the DUNE (Distributed Inference in the User Plane) project, which won the Best Paper Award at IEEE INFOCOM 2025, marking the second consecutive year that an IMDEA Networks paper received this distinction at one of the world's most prestigious networking conferences. The work, led by researchers Beyza Bütün, David de Andrés Hernández, Michele Gucciardo, and Marco Fiore, introduces a scalable approach to embedding artificial intelligence capabilities directly into the transport layer of network infrastructure. Unlike previous approaches that centralise AI inference in the control plane, DUNE distributes the inference workload across multiple programmable network devices, enabling real-time traffic classification and decision-making at line rate. Experiments on a 100 Gbps testbed validated clear gains in accuracy and scalability, demonstrating that distributed user-plane inference is ready for deployment in modern networks. The work addresses a core challenge in intelligent networking: how to bring AI to where traffic actually flows, at the speed and scale that future infrastructure demands.

A third research highlight demonstrated how algorithmic coordination can deliver immediate societal benefit in urban environments. Researchers in the Data Transparency Group developed Cord-Approx, a smart parking coordination system that dramatically reduces the time drivers spend searching for on-street parking spaces. Tested in detailed simulations of central Madrid using real traffic data, Cord-Approx reduced average parking search time from nearly 20 minutes to 6.7 minutes for users of the system, a reduction of 66%. The approach works by predicting likely spot availability from historical occupancy patterns and coordinating multiple drivers simultaneously through an optimal matching algorithm, ensuring that users are guided toward different spots rather than converging on the same ones. Gains peak when spot availability falls in the range of 20–25%, precisely the conditions typical of congested urban centres. The paper was presented at ACM SIGSPATIAL 2025 and attracted wide coverage in major national media, illustrating how network research methods can be applied to everyday challenges in urban mobility and sustainability.

Contributing to a Knowledge-Based Economy

IMDEA Networks continued to translate scientific advances into technological innovation and societal impact. During the year, researchers secured new patents and patent applications in areas including mobility analytics, energy-efficient radio access networks, millimetre-wave communications, and wireless ranging technologies. These activities reflect the institute's commitment to transforming research results into technologies with practical and commercial value.

Startup activity also continued to mature. NetAI expanded its presence in international technology showcases, completed research collaborations with industry and public-sector

partners, filed a new patent, and advanced proof-of-concept deployments with telecommunications and financial-sector stakeholders. AppCensus secured its first Horizon Europe Research and Innovation Action project, while Telcaria strengthened its commercial activity through new public-sector contracts. Together, these initiatives illustrate the growing translation of IMDEA Networks research into entrepreneurial and industrial outcomes.

Beyond commercialisation, the institute continued to contribute to public-interest technology through responsible disclosure activities and policy engagement. Research findings informed regulators, browser vendors, mobile-platform developers, standards bodies, and policymakers, reinforcing IMDEA Networks' role as an independent source of technical expertise on privacy, cybersecurity, artificial intelligence, and emerging digital technologies.

Communicating Research to Society

In addition to producing high-quality scientific results, IMDEA Networks remains committed to ensuring that research findings reach citizens, policymakers, industry stakeholders, and the broader scientific community. Throughout 2025, the institute maintained a strong presence in national and international media, helping communicate the societal relevance of its research and increasing the visibility of Madrid as a centre for advanced ICT research.

Research results and expert commentary appeared in major media outlets including El País, ABC, La Razón, La Vanguardia, Europa Press, Cadena SER, Telemadrid, and specialised technology publications such as Redes Telecom and La Ecuación Digital. Coverage focused particularly on privacy, cybersecurity, artificial intelligence, future communication networks, and the societal implications of emerging digital technologies. These activities help ensure that publicly funded research reaches a broad audience while supporting informed public debate on the opportunities and challenges created by digital technologies.

Building on the achievements of 2025, IMDEA Networks looks forward to further advances in scientific discovery, technology transfer, doctoral training, and international collaboration, continuing its contribution to research excellence, innovation, and economic development in Madrid, Spain, and Europe.

about us

annual report

2025

www.networks.imdea.org

2.1. Profile

IMDEA Networks Institute is a research organization on computer and communication networks whose multinational team is engaged in cutting-edge fundamental science and technology. As an English-speaking institute located in Madrid, Spain, IMDEA Networks offers a unique opportunity for pioneering scientists to develop their ideas. IMDEA Networks has established itself internationally at the forefront in the **development of future network principles and technologies.** Our **team** of highly reputed researchers is designing and creating today the networks of tomorrow.

Some keywords that define us: *5G, 6G, Big Data, blockchains and distributed ledgers, cloud computing, content-delivery networks, data analytics, energy-efficient networks, fog and edge computing, indoor positioning, Internet of Things (IoT), machine learning, millimeter-wave communication, mobile computing, network economics, network measurements, network security, networked systems, network protocols and algorithms, network virtualization (software defined networks – SDN and network function virtualization – NFV), privacy, quantum communication, social networks, vehicular networks, wireless networks and more…*

2.2. Our Strategic Goals

- Conduct first class research on an international level in the area of computer networking
- Transfer technology to the industrial sector, in order to improve its capacity for innovation and competitiveness
- Transfer technology to spin-off-companies in order to promote the release of new products and services to the global market
- Attract and retain human capital of excellence with the aim to internationalize research in the Madrid region
- Collaborate with Madrid's industrial sector, research centers and educational institutions

2.3. Our Vision

IMDEA Networks focuses on an area that has a profound impact on people's lives. Over the last decades, the Internet, smartphones, Wi-Fi and social networks transformed society and the economy. Indeed, the **widespread access to networks** has dramatically changed the way manufacturers produce and supply their goods, how public administrations operate, how professionals work and in general how individuals and society are shaped. **The Internet socio-economic phenomenon** continues to transform our lives at an amazing pace, and will continue to do so in the future with the deployment of new communication technologies and paradigms.

2.4. Our Mission

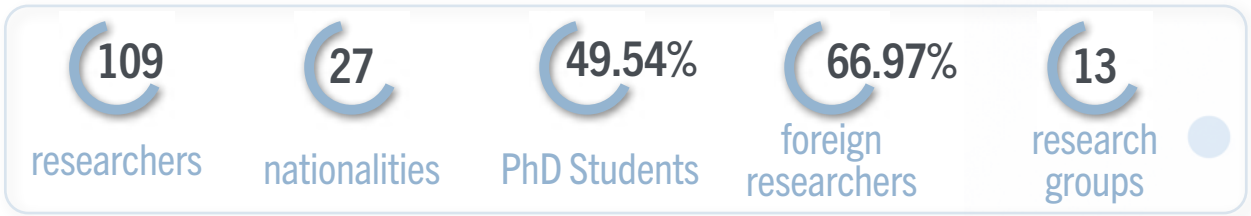
Our mission is to create value by **leading research in protocol, algorithm and systems developments** that enable the **Digital Knowledge Society.** We do this by conducting research and developing innovative and useful scientific and technical advances in the above areas, while actively **promoting their successful transfer to market.** The Institute strives to provide optimal working conditions and the most attractive and best-equipped environment in which researchers can focus on this process of innovation and scientific advance.

RESEARCH GROUPS

- Global Computing Group [Antonio Fernández Anta]
- Internet Analytics Group [Narseo Vallina-Rodríguez]
- NETCOM Lab [Arturo Azcorra, Albert Banchs]
- NetEcon Group [Sergey Gorinsky]
- Opportunistic Architectures Lab [Marco Ajmone Marsan and Vincenzo Mancuso]
- Pervasive Wireless Systems Group [Domenico Giustiniano]
- Wireless Networking Group [Joerg Widmer]
- Data Transparency Group (DTG) [Nikolaos Laoutaris]
- Networks Data Science Group [Marco Fiore]
- Cybersecurity Group [Guillermo Suárez-Tangil]
- Quantum Information Group [Marius Paraschiv]
- Resilient AI Networking Lab [Claudio Fiandrino]
- Distributed Systems and Networks Group [Lucianna Kiffer]

2.5. The Institute in figures

The core strength of the Institute is its international **research team, consisting of talented researchers from 27 different nationalities,** which carries out new scientific discoveries in Computer Networks, and foster the development of emerging technologies.



The facilities of IMDEA Networks Institute

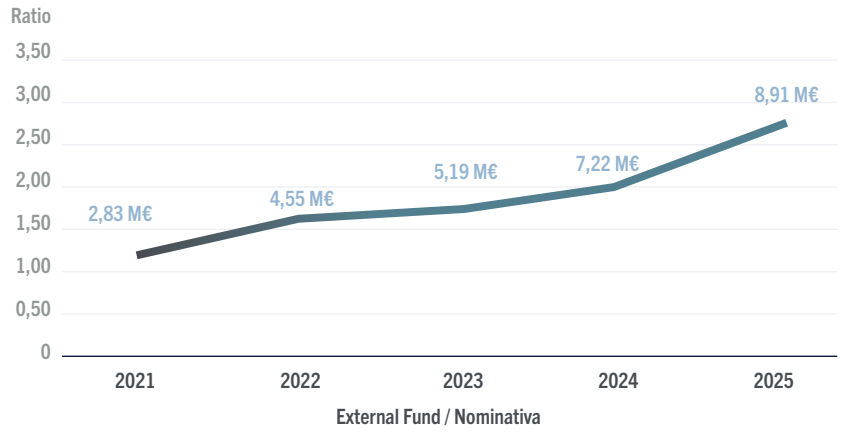
The building and laboratories of IMDEA Networks Institute are located at Leganés, Madrid.

535.49 m² of research labs

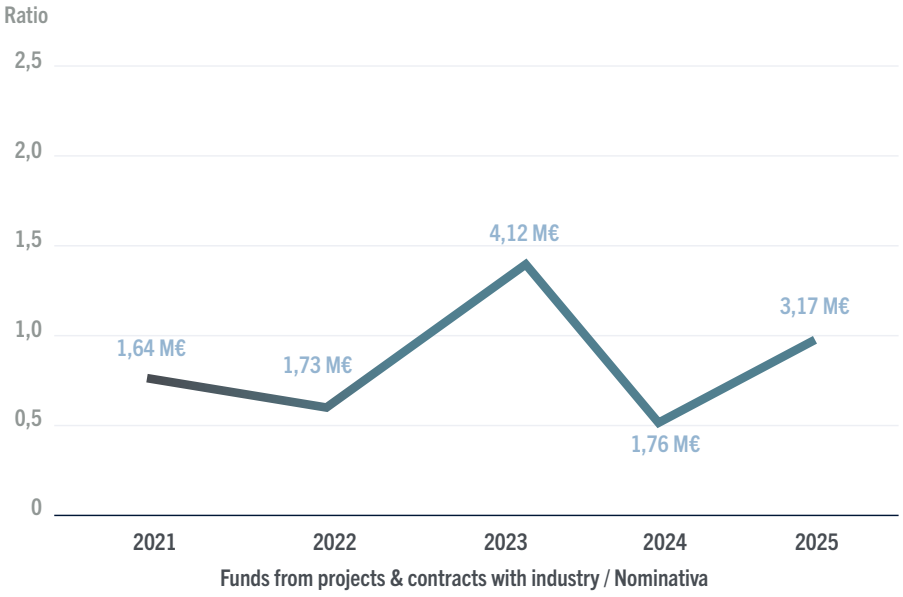
In order to support cutting-edge research, IMDEA Networks invests in the latest, **state-of-the-art laboratories and laboratory test equipment**, endowing the Institute with the capacity of transforming research into high added value products and services.

Direct Funding by the Madrid Regional Government

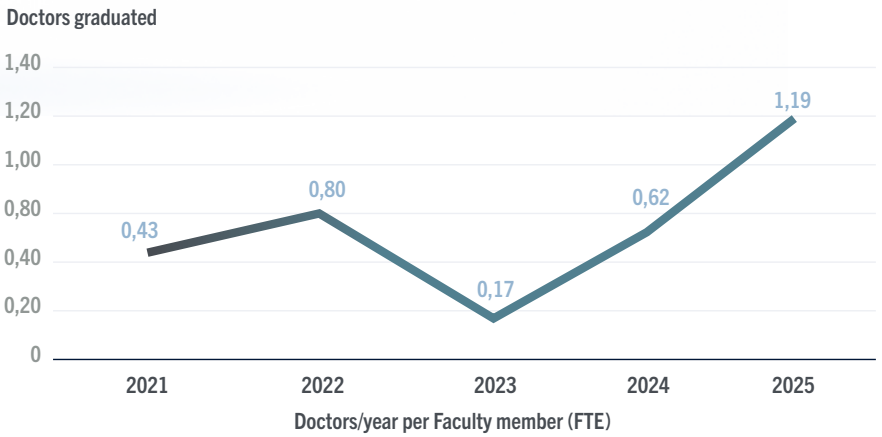
We bring Money to Madrid: Self Funding



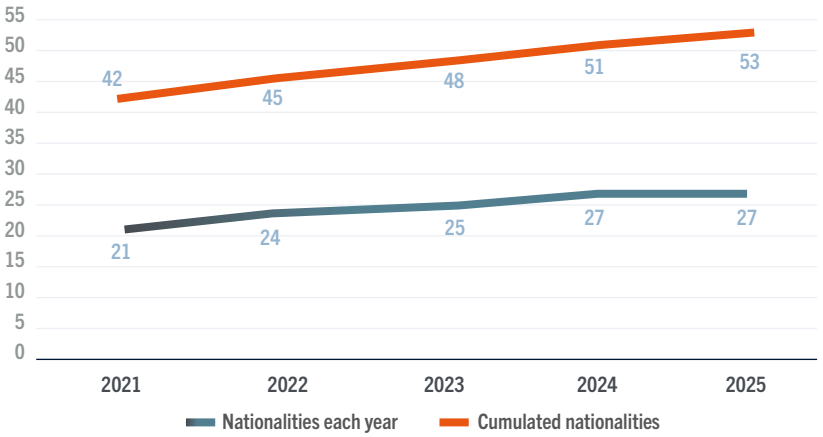
We improve the Competitiveness of Madrid: Projects & Contracts with Industry



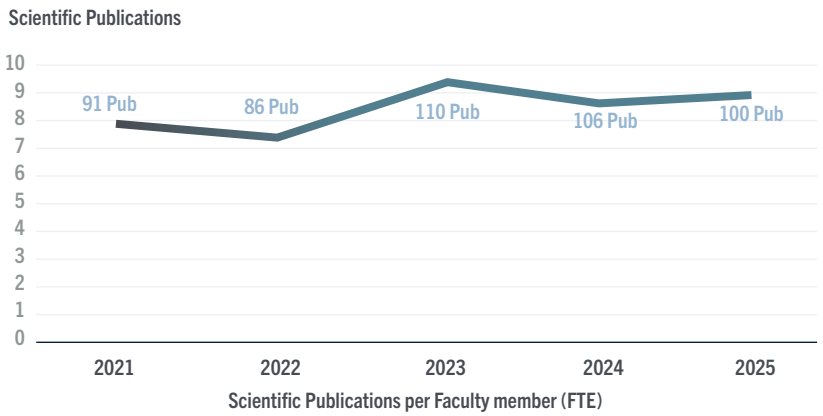
We produce Talent for Madrid: Doctors/year per faculty member (FTE)



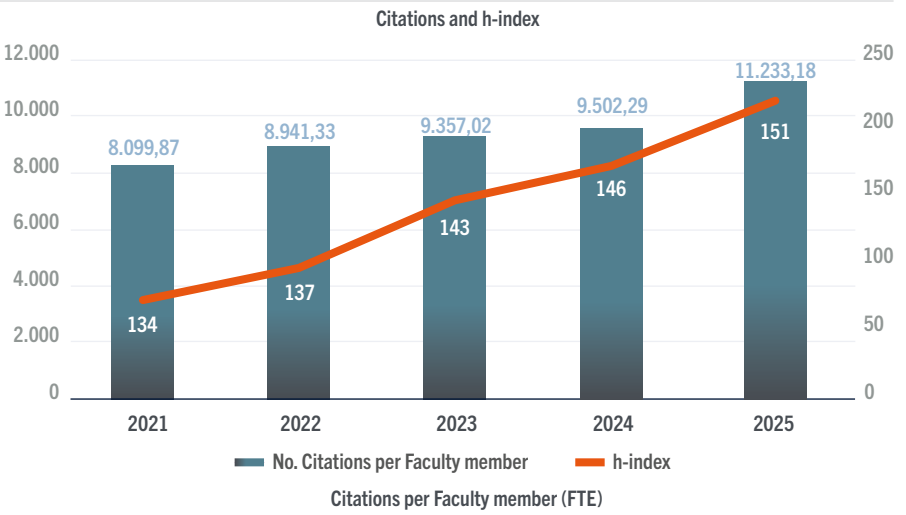
We produce Internationalization of Madrid: Nationalities (Cumulative & Current)



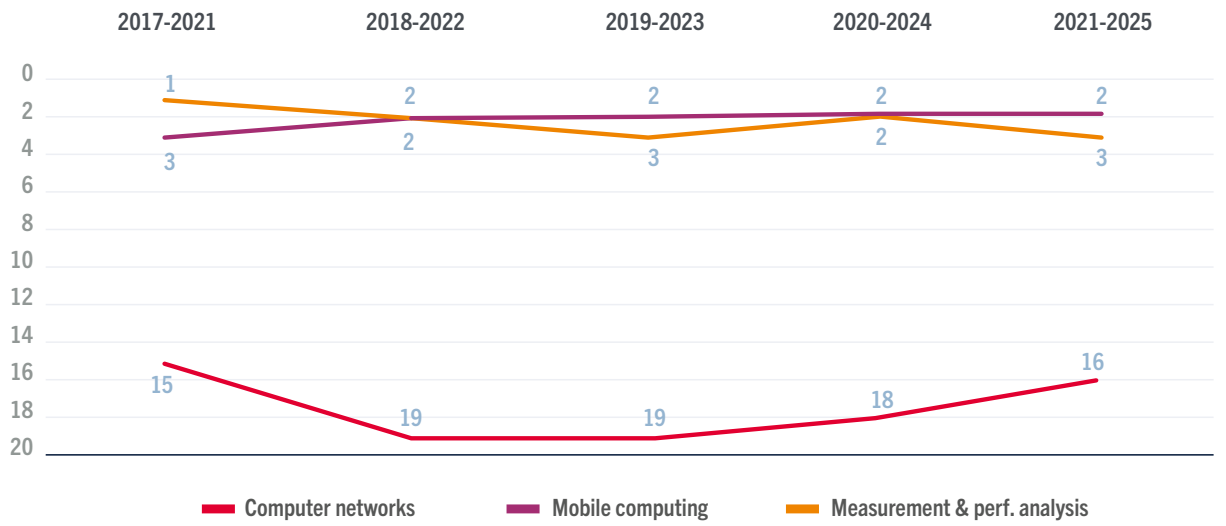
We produce Science in Madrid:Journal and Conference Publications



We produce Leadership for Madrid: Citations

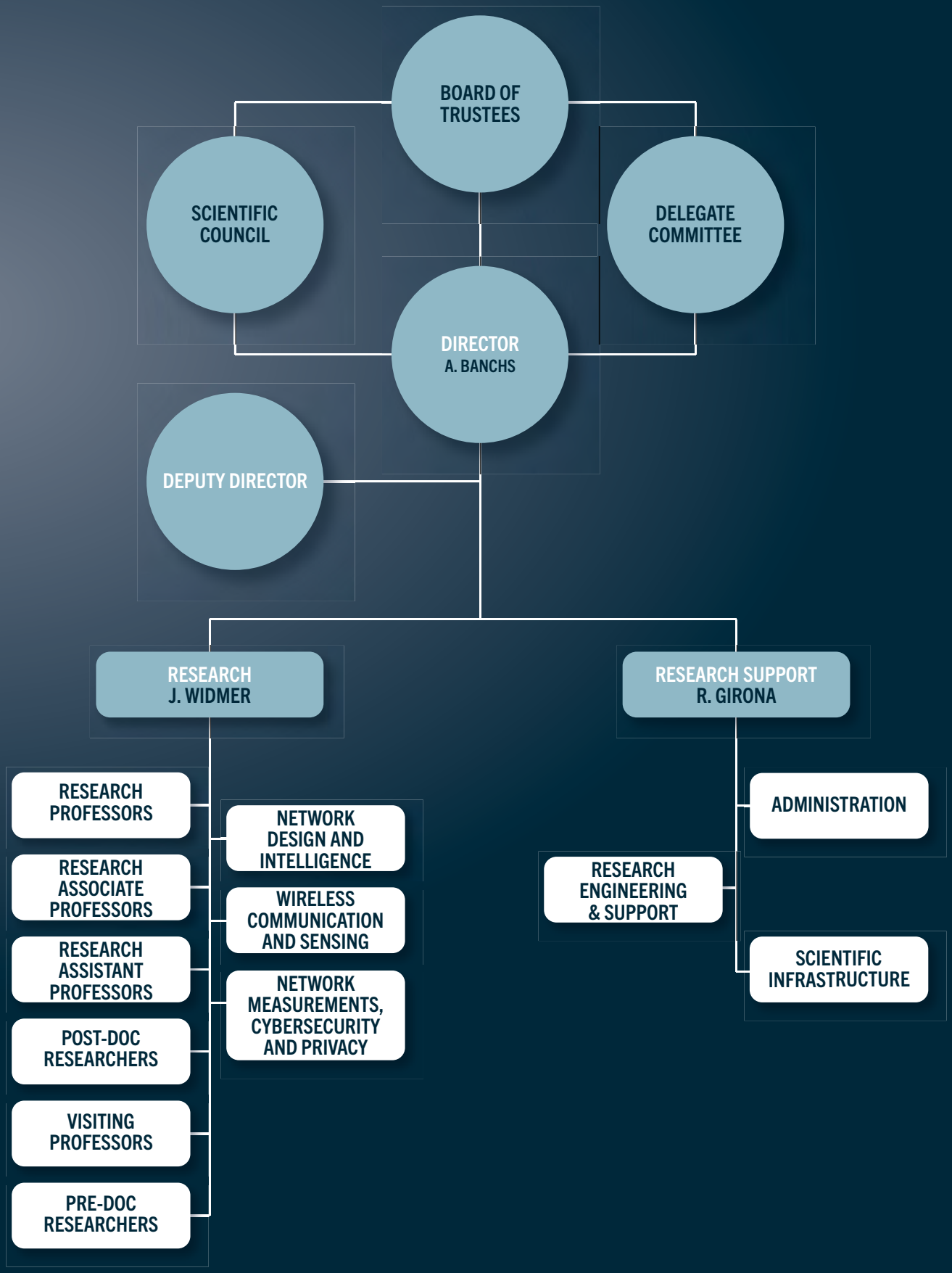


We produce Leadership for Madrid: CS-Rankings European Position



Mobile Computing
CS-Rank 2021-2025

1 ▶ TU Delft
2 ▶ IMDEA Networks Institute
3 ▶ Politecnico di Milano
4 ▶ University of Cambridge
4 ▶ University of Glasgow
6 ▶ TU Darmstadt
6 ▶ University of Edinburgh
8 ▶ Uppsala University
9 ▶ University of Southampton
10 ▶ ETH Zurich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ADMINISTRATION
RESEARCH ENGINEERING & SUPPORT
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2.6.1. Board of Trustees

The Board of Trustees of IMDEA Networks Institute is its highest organ of governance, representation and administration. In accordance with the Institute's statutes, the Board of Trustees is composed of Ex Officio Members representing the Regional Government of Madrid and Elective Members who are recognized leaders in the scientific matters of the Institute. The Director and General Manager of the Institute also participate in the Board of Trustees.

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Prof. Dr. Ralf Steinmetz

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Prof. Dr. Ioannis Stavrakakis
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National and Kapodistrian University of Athens
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Dr. Heinrich J. Stüttgen
Independent consultant

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Faculty of Computer Science & Engineering

2.6.2. Scientific Council

The Scientific Council is a very important organ of IMDEA Networks, advising us on all aspects of the Institute's scientific activities. Among many other things, the Council proposes the incorporation and renewal of Scientific Expert members of the Board of Trustees; reviews and approves scientific appointments and generally provides support to the Director –Dr. Albert Banchs– and the Deputy Director (vacant) in determining scientific research strategy and policies.

The Institute's Scientific Council is composed of internationally prestigious researchers in the field of Telematics and Internet technologies. IMDEA Networks is greatly strengthened by the participation of these eminent scientists. The current members are:

Dr. Gonzalo CAMARILLO

Position: Head of Implementation Components, Ericsson. Finland

PhD: Aalto University. Helsinki. Finland

Research: Signaling; Multimedia applications; Transport protocols; Network security; Networking architectures

Prof. Dr. Carla Fabiana CHIASSERINI

Position: Full Professor, Department of Electronics and Telecommunications, Politecnico di Torino. Torino. Italy

PhD: Electronic Engineering and Telecommunications. Politecnico di Torino. Italy

Research: Wireless and mobile networks

Prof. Dr. Jon CROWCROFT

Position: Marconi Professor of Communication Systems at University of Cambridge. Cambridge. UK

PhD: Computer Science, University College London (UCL) (England, UK)

Research: Computer Science

Prof. Dr. Gustavo DE VECIANA

Position: Cockrell Family Regents Chair in Engineering Professor and Associate Chair of Electrical and Computer Engineering at the University of Texas at Austin. USA.

PhD: Electrical Engineering, University of California at Berkeley. USA

Research: Analysis and Design of Wireless and Wireline Telecommunication Networks; Architectures and Protocols to Support Sensing and Pervasive Computing; Applied Probability, Queuing and Information Theory

Prof. Dr. Jim KUROSE

Position: Distinguished University Professor of Information and Computer Sciences at the University of Massachusetts at Amherst. MA. USA.

PhD: Columbia University. United States

Research: Network Protocols and Architecture; Network Measurement; Sensor Networks; Multimedia Communication; Modeling and Performance Evaluation

Prof. Dr. Edward KNIGHTLY

Position: Sheafor-Lindsay Professor and Department Chair of Electrical and Computer Engineering at Rice University. Houston. Texas. USA

PhD: University of California at Berkeley. Berkeley. USA

Research: Wireless Networks and Protocols; Wireless Access for Developing Regions; Dynamic Spectrum Access Networks

Dr. Pablo RODRÍGUEZ RODRÍGUEZ

Position: Director, CTO Office at Google. CA. USA.

PhD: École Polytechnique Fédérale de Lausanne (EPFL). Lausanne. Switzerland

Research: Networking; Distributed Systems; Information Theory; Wireless and Mobile; Network Economics; Social Networks

Prof. Dr. Ralf STEINMETZ

Position: President of Board of Trustees of IMDEA Networks Institute; Full Professor & Managing Director of Multimedia Communications Lab (KOM) at Technische Universität Darmstadt. Darmstadt. Germany

PhD: Electrical Engineering. Technische Universität Darmstadt. Darmstadt. Germany

Research: Scalable Quality of Service; Content Distribution Networks; Context Aware Communications; Adaptive Mobile Networking; Knowledge Media; Serious Games

Prof. Dr. Ioannis STAVRAKAKIS

Position: Full Professor & Head Department of Informatics and Telecommunications. National and Kapodistrian University of Athens. Athens. Greece

PhD: Electrical Engineering. University of Virginia. Charlottesville. USA

Research: Resource Allocation Protocols and Traffic Management for Communication Networks, with recent emphasis on Peer-to-Peer, Mobile, Ad hoc, Autonomic and Social Networking

Dr. Heinrich J. STÜTTGEN

Position: Independent consultant

PhD: Computer Science, Associative Memory Architecture, University of Dortmund. Germany

Research: Network Architecture and Protocols; Software Defined Networking; Internet of Things (IoT)

research areas

annual report

2025

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As illustrated by **our motto** – **Developing the Science of Networks** – IMDEA Networks identifies and addresses major scientific and engineering challenges in communications and computer networks and also aims to develop these results by bringing them into practical deployments. The nature of these challenges varies with ever-greater rapidity. To ensure the relevance of our research activities, we continuously adjust our research agenda to stay at the forefront of technological innovation. We organize our scientific activities into research areas that reflect our current working priorities, ensuring sufficient flexibility to allow us to respond to emerging technological challenges. The research mission of our Institute also adapts to the strengths of our growing research team and our external collaborators.

The research work at IMDEA Networks is led by **Joerg Widmer,** who is the **Research Director** of the Institute and therefore responsible for its research direction.

Currently, our scientific work focuses on the following three general areas:

network design&intelligence

3.1. Network Design and Intelligence

Any network has a structure and needs protocols to achieve its objectives. The researchers of IMDEA Networks Institute have extensive expertise in architectures and protocols for communication networks, e.g., for network topology design, routing, forwarding, packet classification, in-network storage, congestion control, and media access control. Besides, we have research interests in other networking domains such as social networks, energy networks, and transportation networks.

Our research takes a multi-disciplinary approach to the design and understanding of network protocols and architectures. We go beyond technological constraints and account also for social and economic factors. For example, our research on Internet routing and forwarding accounts for the multitude of Internet service providers and their individual economic interests. In working on either centralized or decentralized solutions to problems, we assume that perfect information is never available. To deal with such uncertainty as well as selfishness of individual entities, our analysis adopts game-theoretic techniques and online algorithms. Our protocol design assumes that behavior of counterparts is always unpredictable to some extent. Hence, the designed protocols rely on continuous learning and adaptation as the main modes of operation.

Practicality is another distinguishing aspect of our research. Real data serves as a departing point for our analytical efforts as well as a basis for validating our analytical conclusions. For instance, our large-scale simulation studies of Internet routing rely on real Internet topologies. Furthermore, we implement our theoretical ideas and make prototypes available to the public, either directly or through our commercial partners.

An important focus of our work is on the systems side of networks. For example, we explore tradeoffs between simplicity and expressiveness of packet processing engines, new abstractions for heterogeneous control planes, and network virtualization techniques. We also work on networking aspects that pertain to cloud computing.

3.2 Wireless Communication and Sensing

wireless communication&sensing

Given the scarcity of wireless spectrum resources and the rising demand for mobile applications, optimizing wireless communication and improving wireless network architectures is currently one of the most important and challenging research topics in networking. The proliferation of inexpensive, high-rate mobile devices and ubiquitous connectivity opens up a vast spectrum of possible new services but also poses unique challenges concerning scalability, interference and the unpredictability of the wireless medium.

IMDEA Networks is involved in a number of different wireless research areas. We are investigating emerging wireless technologies such as extremely high frequency communication for 5G and wireless LAN and Visible Light Communication, which promise to increase wireless data rates by an order of magnitude or more. Our work on capacity improvements also focuses on topics such as ultra-dense networks, intelligent interference management, cooperative coding and network coding, improved medium access control mechanisms that make use of advanced physical layer technologies such as MIMO, successive interference cancellation, etc.

At the same time, mobile network architectures need to support these new technologies as well as new use cases, and thus become more flexible. We perform research on network architectures for 5G and beyond, specifically focusing on software-defined networks

(SDN)-based architectures and network function virtualization (NFV). In addition, wireless networks are becoming more heterogeneous as they are gaining traction in more diverse use cases such as the Internet of Things (IoT) and intermittently connected or delay-tolerant networks, unmanned aerial vehicular networks. The research activities span medium access control (MAC), routing, error control and transport protocols, both as standalone entities and as part of cross-layer design frameworks. To improve the flexibility and programmability of future wireless technologies, we also explore novel programmable interfaces that expose low-level operations to foster network evolution and enable performance optimization and service customization. For a number of the above use case scenarios, efficient and accurate device localization is highly useful.

We recognize the importance of bridging the gap between theoretic results and applied wireless research and have deployed a range of wireless testbeds (for mm-wave, visible light communication, 5G, IEEE 802.11, and others) on which we implement and evaluate our ideas.

network measurements, cybersecurity&privacy

3.3 Network Measurements, Cybersecurity and Privacy

The rapid evolution of the Internet, comprising the fixed network, mobile portable systems and the Internet of Things (IoT) has given birth to a rich ecosystem of applications, personalization and services that is changing the way billions of users communicate and interact with their environment. This digitalization of the world has allowed new innovative applications with new levels of personalization and the ability to interact the environment. However, this trend is also producing large volumes of data, which may raise privacy and security threats unseen in previous networked technologies while also generating unknown traffic patterns and performance bottlenecks which can have a negative impact on the network and user experience.

At IMDEA Networks, we are involved in novel research efforts to empirically illuminate how users, networks, devices and applications interact, behave and perform in the wild.

Our research is particularly focused on conducting analytical measurements of real-world networked systems, with a strong interest in understanding their use (and abuse) as well as the performance, privacy and security challenges present in emerging networking technologies. Our research team also develops Big Data solutions to analyze and process large-scale traffic-, network- and application-generated data fast and correctly.

At IMDEA Networks, we engage and collaborate with users, cyber-activists, industry and regulators to identify and address important problems of societal, industrial and academic interest from a practical angle. Often times, our researchers are responsible for developing practical tools to assist the different stakeholders to understand how users, devices, networks, services, and applications interconnect, perform and behave behind the scenes.

3.4 Headquarters and research laboratories infrastructure

3.4.1 Headquarters

IMDEA Networks includes in its goals the provision of the highest international level of research and technology development capabilities geared to the advancement of future Internet technologies. Our headquarters aim to fulfill the functional requirements of a leading- edge research center and to attract researchers from around the World. The main objective of our office and lab space is to provide a high quality-working environment for researchers.

We are continuously refurbishing our site at Avenida del Mar Mediterráneo in Leganes (Madrid) in order to furnish it with renovated and extended facilities. The new spaces are conceived primarily with researchers' needs and preferences in mind, including spacious premises with state-of-the-art facilities and equipment, labs adapted to the needs of our lines of research, with excellent communications and ICT infrastructure, and specific research equipment.

The area of the building already remodeled in 2025 amounted to 3,091 m2.

During 2025 we have performed the following works to improve our facilities:

- **New data center:** by the end of the first half of 2025, we have completed the construction of a new data center, to host all the scientific infrastructure and equipment bought with the UNICO R&D scientific infrastructure acquisition projects: ADVANCE_6G, INES, and TEST-6G.

– 12 racks for data processing (servers).
– 1 rack for communication switches.
– 2 A/C precision units of 30 kW + free-cooling system.
– 2 UPS units of 40kVA to protect all the equipment from power outages.
– An automatic fire protection system.

- **New 5G radio infrastructure:** we have deployed an infrastructure at the Polytechnic Campus of Carlos III University of Madrid (UC3M) to provide 5G coverage in the area, with the following objectives:
  – Conduct experiments related to areas where 5G and Wi-Fi act as enablers, such as the Internet of Things (IoT), services for smart cities, synchronized networks for industrial applications, robotics, etc.
  – Lay the foundations to define the future 6G/Wi-Fi 8 communications networks based on real-world experience with advanced 5G/Wi-Fi 6E/7 networks.
  – Enable the implementation of services with special security requirements: perform exams, access confidential information, etc.

3.4.2 Research laboratories

At our scientific laboratories we aim to transform our research results into high value added products and services. They allow us to perform:

- The measurements and prototypes of the devices, protocols and algorithms developed by our researchers.
- Simulations of highly complex baseband and medium access control systems, as well as sophisticated radio subsystems.
- Radio parameter measurements involved in mobile and fixed communications and evaluation of effects on the radio spectrum of the new protocols and algorithms designed in the Institute.
- The development and deployment of reliable, high-performance networked systems, of software defined networking, and of novel architectures and protocols for behavioral networking and for network economics.

In order to support cutting-edge research, IMDEA Networks invests in the latest, state-of-the-art laboratory test equipment, endowing the Institute with the capacity of transforming research into high added value products and services.

The laboratories are used for:

- Constructing prototypes and measuring the devices, protocols and algorithms developed by the researchers.
- Simulating complex base-band and medium access systems, as well as sophisticated radio subsystems.
- Measuring radio parameters involved in mobile, fixed and satellite communications, designing and characterizing radiating elements, and measuring the effects on the radio electric spectrum of new protocols and algorithms designed by the Institute.

IMDEA Networks is aware of the importance of having the best equipment to perform experimental work. We invest in the latest technologies.

In the scope of project ADVANCE_6G, we have acquired the following equipment:

- 3 smartpoles for deploying radio units and antennas to provide outdoor 5G coverage in both low-frequency and millimeter-wave bands, as well as Wi-Fi 7.
- 3 gNBs operating in the N7 band at low power (4 x 5 watts) and supporting 4x4 MIMO.
- 3 gNBs operating in the N258 band at low/medium power.
- 1 server Dell PowerEdge R770.
- 1 server Dell PowerEdge R7625.
- 1 server Dell PowerEdge R470.

This equipment will be used to achieve the following scientific and technological objectives:

1. Expansion of the 5TONIC-SLICES node radio access network to provide new radio access network infrastructure that facilitates the identification of technical requirements for 6G through experimentation with use cases across different operational environments.

2. Advanced radio communication systems for 6G. This objective proposes the development of advanced testing platforms focused on technological solutions expected to be essential for 6G, such as the use of high frequencies and wide bandwidths with MIMO, the joint process of communications and environmental sensing, including localization, or the use of intelligent reconfigurable surfaces.

3. Artificial Intelligence in 6G mobile communication networks. This objective aims to enable the development of solutions based on the use of artificial intelligence to address various aspects of 6G network operations, from network management to fraud detection and support for IoT services.

4. Quantum communications. 6G will require new mechanisms to secure communications, and the use of quantum cryptography is one of the most promising solutions.

In the scope of project INES, the following equipment has been purchased:
- 6 Dell PowerEdge R760xa servers, all of them equipped with high-performance GPUs.
- 4 Dell PowerEdge R7615 servers, all of them equipped with high-performance GPUs..
- 1 Dell PowerEdge 7715 server, with high-performance GPUs.
- 2 Dell PowerEdge R7625 servers.
- 4 Dell PowerVault MD2412.
- 1 Keysight N9952B FieldFox 50 GHz signal analyzer.

- 1 compact up-converter (CCU) designed to convert intermediate frequency (IF) signals to radio frequency (RF) in the D-band, using the WR-6.5 waveguide format, and 1 portable extension for a WR6.5PSAX spectrum analyzer, designed to extend the coverage of portable spectrum analyzers to the 110–170 GHz band (using the WR-6.5 waveguide format).
- 3 Ettus USRP X410 software-defined radio systems.

This equipment will be used to achieve the following scientific and technological objectives:

1. Build a programmable 5G network to test proposed improvements for 6G, end-to-end, and capable of supporting advanced use cases for the standard and for future evolution beyond 5G.

2. Integrate network intelligence into the built infrastructure for orchestration, management, and zero-touch self-repair, both in the network core and at the network edge.

3. Test advanced applications for 6G technology in the infrastructure through the development and evaluation of advanced use cases and network slices, ranging from the deployment of cyber-physical systems to the metaverse.

4. Study 6G Internet of Things (IoT) use cases and deploy infrastructure for an operational and efficient IoT, to offer personalized solutions, make them sustainable, and study security and privacy implications.

In the scope of project TEST-6G, we have invested in the following equipment:

- 2 Nvidia DGX H200 servers to conduct experiments in the following areas:
  - AI algorithms for the semantic control of digital twins.
  - AI algorithms to improve network deterministic characteristics (i.e., resilience, the effect of introducing a data flow into the network).
  - AI algorithms to optimize physical layer and MAC parameters of 5G and IEEE 802.11 networks.
  - Digital twin models of complete operator networks.
  - Mathematical models for P4 network models.
  - Algorithms for network automation, orchestration, and network function placement.
  - Algorithms to optimize network energy consumption.
  - Provision of AIaaS (AI as a Service) systems for researchers from other institutions.

Both servers are connected via a robust network infrastructure to ensure maximum performance while sharing computing resources and to achieve high parallelization in training and inference processes with multi-GPU models in Generative AI or Agentic AI environments.

- 3 Ettus USRP X410 software-defined radio systems. One of the project's objectives is to expand the existing scientific and technological infrastructure and equipment at the SLICES-Madrid node (part of SLICES-RI). To achieve this objective, and considering that the SLICES-Madrid node already has a considerable infrastructure for advanced 5G/5G experimentation, the TEST-6G project proposes to carry out activities in the area of programmable and fully virtualizable cellular networks. This area aims to equip the infrastructure with a set of software-defined radios that enable basic research at the physical layer and in Open RAN (O-RAN) architecture. Additionally, as part of this set, multiple instances of the SLICES-Blueprint will be made available to the public. This element enables federated experimentation within the SLICES-RI framework by providing a set of software-defined radios within an O-RAN network deployment.

3.4.3 The NEXTONIC Laboratory

Nextonic (rebranded from 5TONIC) entered 2025 marking its 10th anniversary by accelerating its transition from 5G maturation to the leadership of 6G development and quantum networking. As an open research and innovation ecosystem, the lab continues to serve as a critical bridge between academic research and industrial application.

Key Research & Technology Milestones

In 2025, the lab shifted its focus toward "Beyond 5G" and early 6G infrastructures, characterized by several breakthrough deployments:

- **Smart Connectivity Infrastructure:** The lab successfully deployed an innovative **Smart Lamppost** featuring 5G millimeter-wave (26 GHz) and **Wi-Fi 7** access. Integrated into the Nextonic core network, this setup demonstrated the outdoor capacity and viability of millimeter-wave 5G.

- **Quantum Communications:** A significant milestone was reached with the closing of the **MadQuantum-CM** project. Nextonic integrated an advanced testbed for secure quantum communications, positioning the lab as a key enabler for the future Spanish and European quantum networks.

- **Network Slicing & Automation:** In collaboration with **Ericsson and Telefónica,** the lab validated end-to-end **5G Standalone (SA) network slicing.** This allows for the automated creation of dedicated virtual networks tailored to specific business needs, ensuring guaranteed latency and bandwidth for critical services.

Major Projects & Vertical Use Cases

The lab's activity in 2025 was heavily driven by the **European TrialsNet project** and the **Horizon Europe Cluster 4** program, focusing on real-world "vertical" applications:

- **Immersive Entertainment:** High-demand testing was conducted at the Movistar Arena, where 5G SA technology provided immersive fan engagement and 360-degree viewing experiences during professional basketball games.

- **Public Safety & Emergency Coordination:** The lab validated "Smart Crowd Monitoring" using AI-driven sensors and "Mass Casualty Incident" coordination tools, which utilize smart wristbands and private 5G networks to assist emergency responders.

- **Industrial Deterministic Networking:** Partnering with **University Carlos III of Madrid (UC3M),** Nextonic developed multi-technology solutions (5G, Wi-Fi, and Industrial Ethernet) to ensure the ultra-low latency required for industrial robotics and autonomous systems.

- **Knowledge Transfer:** The lab hosted several high-level events, including the *Horizon Europe Info Day,* and welcomed delegations from the **Ministry for Digital Transformation** to showcase Spain's readiness for the next generation of digital infrastructure.

10th Anniversary Event

On October 21, 2025, the 5TONIC laboratory celebrated its 10th anniversary at the Espacio Fundación Telefónica in Madrid, bringing together its members, authorities, and representatives from industry, research, and academia. Emilio Viciana, Consejero de Educación, Ciencia y Universidades of the Comunidad de Madrid, who opened the evento. At this landmark event, the laboratory also announced its rebranding as **NEXTONIC,** adopting the slogan **"Where Networks Evolve."**

The new identity reflects a deliberate shift toward a cross-cutting vision of network evolution that transcends the mere succession of technological generations, positioning the laboratory as a leading space to define and validate the technologies that will shape future communications, with special emphasis on 6G. Rather than framing 6G as an abrupt technological leap, NEXTONIC promotes a continuous and incremental evolution of networks, leveraging the full experience gained with 5G and focusing on open, disaggregated architectures, native automation, sustainability by design, and the exposure of network capabilities through APIs.

A roundtable featuring experts from Telefónica, Ericsson, UC3M, IMDEA Networks, Capgemini, and ABB highlighted the value of open collaboration and the future role of NEXTONIC in the development of new technologies, reaffirming the laboratory's mission as a bridge between research and market under its renewed identity.

research projects, grants and fellowships

4.1. Funding awards

We dedicate extensive resources to obtaining external funding to support our research team and in particular those members who excel in their capacities, with the objective to promote the scientific and technical potential of our human capital and, as a direct result, the outreach of the Institute's activities.

The funding of our individual researchers takes the form of awarded grants, scholarships and fellowships. These awards are similar to externally funded research in their openness and the strict selection processes used, and they confer prestige on the awardee as well as on the organization he/she is affiliated to.

4.1.1 National

Ramón y Cajal Grants

Programa de Ayudas para contratos Ramón y Cajal

Awardees

- Dr. Narseo VALLINA RODRÍGUEZ, Research Associate Professor
- Dr. Guillermo SUÁREZ-TANGIL, Research Assistant Professor
- Dr. Claudio FIANDRINO, Research Assistant Professor

Funded by

Spanish Ministry of Science, Innovation and Universities (Ministerio de Ciencia, Innovación y Universidades - MICIU)

Juan de la Cierva Grants

Ayudas para contratos Juan de la Cierva

Awardees

- Dr. Livia CHATZIELEFTHERIOU, Post-Doc Researcher (Call 2022)
- Dr. Syed WAQAS, Post-Doc Researcher (Call 2023)
- Dr. Marco CANIL, Post-Doc Researcher (Call 2024)

Funded by

Spanish Ministry of Science, Innovation and Universities (Ministerio de Ciencia, Innovación y Universidades - MICIU)

INVESTIGO-SEPE Grants for young job seekers to undertake research and innovation initiatives

Ayudas para la contratación de jóvenes demandantes de empleo en iniciativas de investigación

Awardees:

- Pablo FERNÁNDEZ, Research Engineer
- José Pedro MARTÍN YUBERO, Research Engineer
- Gonzalo DÍAZ ELIAS, Research Engineer

Funded by

Spanish Ministry of Employment and Social Economy (Ministerio de Trabajo y Economía Social – SEPE)

Predoctoral Grants – National

Awardees

- Stavros ELEFTHERAKIS
- Arivarasan KARMEGAM
- Chen JAMINON DE-ROECK
- Abhishek DUTTAGUPTA

Funded by

Spanish Ministry of Science, Innovation and Universities (Ministerio de Ciencia, Innovación y Universidades - MICIU)

Mobility Grants

For Senior Researchers mobility stays abroad.

Awardee

- Domenico GIUSTINIANO

Funded by

Spanish Ministry of Science and Innovation and Universities (Ministerio de Ciencia e Innovación y Universidades)

4.1.2 Regional

Predoctoral Grants - CAM

Awardees

- Sergio DÍAZ ARANDA (Call 2022)
- Beyza BÜTÜN (Call 2022)
- Bei OUYANG (Call 2022)
- Louis MIERMONT (Call 2023)
- Vinuri BANDARA (Call 2023)
- Francesco PIGATO (Call 2024)
- Maximo PIRRI (Call 2024)

Funded by

Department of Science, Education and Universities of the Regional Government of Madrid (Consejería de Ciencia, Educación y Universidades de la Comunidad de Madrid)

Talent Attraction Grant – Modality 1: Researchers with Experience. Extension for 1 year.

Awardee:

- Marco FIORE, Research Associate Professor

Funded by

Department of Science, Education and Universities of the Regional Government of Madrid (Consejería de Ciencia, Educación y Universidades de la Comunidad de Madrid)

Talent Attraction Grant – Modality 2: Young Postdoctoral Researchers

Awardee:

- Dr. Antonio BAZCO-NOGUERAS, Post-Doc Researcher

Funded by

Department of Science, Education and Universities of the Regional Government of Madrid (Consejería de Ciencia, Educación y Universidades de la Comunidad de Madrid)

4.1.3 Private

with support from Google.org

Google PhD Fellowships

Awardees

- Vinuri BANDARA (Call 2025)

Funded by

Google

4.2. Ongoing projects

Externally funded research projects enable us to collaborate with researchers from other organizations and backgrounds. Research funding is awarded following an open competitive selection process in which project proposals, and the private or public sector organizations presenting them, are subject to rigorous scrutiny. Such thoroughness helps to ensure that research undertaken with those funds is relevant, well managed and with high probabilities of success in achieving its stated goals.

PIXEurope

(Advanced Photonic Integrated Circuits Pilot Line for Europe)

Funded by different entities and sources: European Commision and CHIPS JU through HORIZON EUROPE, DIGITAL EUROPE PROGRAME and Joint Procurement Agreement; Spanish Ministry of Digital Transformation (UNICO)

Duration: August 2025 to December 2030

PIXEurope will establish a globally unique Open Access Pilot Line, addressing key technological and production challenges associated with Photonic Integrated Circuits (PICs). PIXEurope is a distributed Pilot Line, built on a collaboration between world-class research organisations using state-of-the-art equipment to develop breakthrough technologies and processes across the complete PIC supply chain. This includes improved monolithic chip fabrication and novel materials integration processes, advanced wafer-level packaging processes, and high-throughput test and reliability analysis procedures. These breakthroughs will also enable the integration of PICs with EICs to produce advanced semiconductor systems. PIXEurope's concept is to create a uniquely unified research, training and commercialisation platform, providing well-coordinated services to develop and de-risk advanced PIC technologies, giving Europe unprecedented control, sovereignty and a competitive advantage in this critical technology.

PIXEurope will work with European manufacturers to transfer breakthrough technologies and processes to industry, creating a unique research and industrial ecosystem to increase

PIC production capacity. PIXEurope will also support research organisations to bridge the gap between lab and fab, accelerating research commercialisation, and will train a high-skills workforce, ensuring companies can access the expertise they need to grow their businesses.

When operating, PIXEurope will offer an unparalleled range of MPW runs, from chip to package and test, as well as specialized services. PIXEurope will establish in-depth online and hands-on training courses on advanced PIC manufacturing, targeting 1000 attendees annually. PIXEurope will foster a vibrant European PIC community, accelerating research commercialisation, increasing production capacity and strengthening supply chains, enabling European industry and researchers exploit the vast potential of PIC technologies.

More info

ANT

(Embedded AI Systems and Applications)

Funded by: European Commision HORIZON EUROPE
Duration: February 2025 to January 2029

Funded by
the European Union

ANT is a MSCA Doctoral Networks project funded by the European Union in the call HORIZON-MSCA-2023-DN-01-01. The MSCA Doctoral Networks program aims to train entrepreneurial, innovative and resilient doctoral candidates, able to face current and future challenges and to convert knowledge and ideas into products and services for economic and social benefit.

Embedded Artificial Intelligence (AI) has emerged as a transformative technology with immense potential to revolutionise various domains, spanning from robotics and healthcare to environmental monitoring and the Internet of Things. This project aims to train a network of 15 excellent Doctoral Candidates (DCs) by addressing the fundamental challenges of Embedded AI and accelerating the development of Embedded AI systems and applications through an innovative and interdisciplinary research and training program.

ANT consists of four interconnected Work Packages (WPs) that encompass different aspects of Embedded AI.

- WP1 tackles the challenges in designing low-footprint standalone Embedded AI models under resource constraints and with diverse contexts and evolving environments.

- WP2 goes beyond standalone Embedded AI and designs innovative distributed and scalable learning solutions for heterogeneous Embedded AI networks under energy and bandwidth constraints.

- WP3 enhances the trustworthiness of Embedded AI with explainability, robustness, security, and privacy.

- ANT concludes in WP4 with a concerted effort to transfer fundamental research contributions to industry-relevant applications in autonomous robotics, underwater IoT, mobile healthcare, and smart farming, boosting Europe's position in the global AI market both from a talent and a technological perspective.

These interdisciplinary and inter-domain research training, along with the comprehensive soft-skills training (spanning from presentation skills to intellectual property, marketing, and economics, etc.) will make ANT's 15 DCs highly employable in various industries, academia, or public government bodies, and will position the EU at the forefront of the emerging revolution of Embedded AI on Things.

More info

FINALITY

(saFe learNIng for lArge scaLe InTerconnected sYstems)

Funded by: European Commision HORIZON EUROPE

Duration: February 2025 to January 2029

Funded by the European Union

FINALITY is a MSCA Doctoral Networks project funded by the European Union in the call HORIZON-MSCA-2023-DN-01-01. The MSCA Doctoral Networks program aims to train entrepreneurial, innovative and resilient doctoral candidates, able to face current and future challenges and to convert knowledge and ideas into products and services for economic and social benefit.

FINALITY project evolves the theoretical computer science curriculum focusing on the mastery of prompt and safe learning techniques for interconnected systems. The trainee team will develop and integrate innovative methodological tools specialized for AI-intensive resource allocation, particularly in the context of large-scale critical infrastructures for communication and computing. They will combine AI methods that are safe by respecting system boundaries and are prompt in adapting to the environmental changes. Through their research training, the FINALITY candidates will prioritize the principles of fairness and computational parsimony of AI methods. The FINALITY doctoral team will be supported by a world-class team of academic and industrial advisors, who work routinely on all the tools used in AIbased RA, advancing their theoretical foundations and their application in the industrial domain. They possess extensive experience in training doctoral students, and an excellent track record of joint research activities across the consortium. International exposure and dissemination are ensured by an extra-EU supervisory board.

More info

TUCAN6-CM

(Technologies for sensing and communication in 6G networks)

Funded by: Madrid Regional Government (TECNOLOGÍAS 2024)
Duration: January 2025 to December 2028

The sixth generation (6G) of mobile networks promises a paradigm shift in communications, far exceeding the capabilities of 5G technology. TUCAN6-CM aims to optimise, coordinate and integrate communication, computing and sensing technologies within 6G networks to improve their performance, efficiency and functionality. TUCAN6-CM will focus its research efforts on the integration, interoperability and synergistic interactions between these components. To achieve these objectives, our consortium is composed of 10 groups (three of them emerging) from 4 institutions with complementary competences in order to successfully implement the project

More info

DISCO6G-CM

(Development and integration of sensors and communications for advanced services in 6G)

Funded by: Madrid Regional Government (TECNOLOGÍAS 2024)
Duration: January 2025 to December 2028

DISCO6G focuses on the design and implementation of an integrated sensing and communications system (ISAC) for B5G/6G networks. It seeks to use the network as a distributed sensor, taking advantage of the use of the new millimetre and submillimetre frequencies needed to obtain a higher bandwidth. Sensors integrated in communication network are developed using machine learning techniques. Two use cases are proposed in the transport and biomedical sectors, which require robust and reliable systems with low latency. The inter-university consortium has been created considering physical layer, network architecture, and biomedical profiles.

More info

SUN-DT

(Smart Use of Novel Digital Tools for advanced performance and reduced costs in CSP tower plants)

Funded by: European Commision HORIZON EUROPE
Duration: October 2025 to September 2028

SUN-DT partners will take advantage of the great potential of the promising CSP tower technology together with the hitherto unexplored possibilities offered by digitalisation to execute this project, aimed at increasing the competitiveness of the European CSP tower plants sector, as well as that of its supplier digitalisation companies.

To do so, the project members will jointly mature four complementary and interoperable innovative digital tools: i) a tool for calibration and characterization of heliostats; ii) a Digital Twin of the solar field and the receiver; iii) an Energy Management System for dispatch optimization, and iv) a predictive tool for enhanced Operation and Maintenance(O&M). These digital tools will then be integrated into a single platform capable of processing data collectively to optimize decision-making at the plant level and tested for validation in 2 experimental test facilities and 2 commercial tower plants.

Two of the world's largest solar thermal projects, the Khi Solar One plant and the Cerro Dominador plant, operated by two of the world's leading solar energy players, COX and ACCIONA respectively, have been selected for demonstration purposes in commercial plants. Each of them represents the two possible types of tower plants (circular solar field and north/south solar field), ensuring the versatility of the solutions adopted for all current and future plants. The demonstration period of the tools will be extended to 1,5 years, which will provide more robust test data and will bring the possibility of testing a complete year with its two distinct seasons: summer and winter.

Additionally, the joint maturing of the digital tools and their integration into a common infrastructure for running/coordinating/processing them together will increase the efficiency of the plants by managing multiple elements simultaneously. This will increase the number of data sources, and the amount of shared information for better decision-making

More info

6THSENSE

(Joint Communication and Sensing in 6g Networks)

Funded by: European Commision HORIZON EUROPE

Duration: February 2024 to January 2028

Funded by the European Union

Having lost a significant share of the market to big players from the US and Asia, Europe is no longer at the forefront of the telecommunication industry. However, new services focusing on remote health monitoring, industry 4.0 and autonomous vehicles have created a unique opportunity for Europe to regain a leading position in 6G. Unlike traditional mobile broadband that mainly connects people, these emerging services not only exchange data but also critically rely on accurate information from their surroundings (i.e. sensing). Consequently, joint communication and sensing (JCAS) is a key feature of 6G networks, where devices will embed wireless sensing capabilities (e.g. localization, activity recognition). JCAS faces major challenges since it demands fundamental changes to current communication systems.

6thSense consortium is an intersectoral and interdisciplinary cluster of excellence formed by electrical engineers and computer scientists that has pooled leading members of large EU initiatives (5G PPP), industry leaders (e.g. Nokia, Ford, Bosch) and academic institu-

tions (e.g. KUL, TUDelft, Princeton, UCLA). Benefitting from this consortium, 6thSense follows a holistic approach to address these challenges by:

- WP1: Going beyond traditional sub-6GHz systems and enabling sensing in new B5G/6G communication bands, i.e. millimeter-wave and visible light.
- WP2: Addressing distributed sensing and networking challenges through architecture and protocol design.
- WP3: Handling the analytical complexity of JCAS by combining the strengths of classical signal processing and optimization models with advanced machine learning techniques
- WP4: Transferring these research contributions to industry-relevant applications in healthcare, manufacturing, and automotive sectors.
- WP5: Comprehensive soft-skill training
- WP6: tailored dissemination and exploitation strategy

The 10 PhD fellows will become highly employable in various industries, academia, or public government bodies.

More info

MiRACLE

(Millimeter scale Repeatable and Absolute Coherent Localization Enabler)

Funded by: European Commision HORIZON EUROPE
Duration: October 2025 to September 2028

Funded by
the European Union

MiRACLE is a MSCA project funded by the European Union in the call HORIZON-MSCA-2024-PF-01.

In recent years, wireless localization and sensing have gained significant traction in the industry, and the requirements in terms of accuracy and reliability have become tighter. Project Millimeter scale Repeatable and Absolute Coherent Localization Enablers (MiRACLE) aims to blur the line between wireless localization and metrology by pushing the accuracy of absolute wireless localization systems below the millimeter accuracy while maintaining repeatable performance over environmental changes. This will enhance the efficiency of future manufacturing plants, as well as enable life-saving technologies like telesurgery.

To achieve these ambitious goals, it will exploit coherent information from a combination of all the cellular frequency bands, including the upcoming FR3 band (7GHz-24GHz) present in the 6G roadmap. Due to the recent introduction of FR3, there is a lack of commercial experimental hardware operating in that band. For this reason, the project also aims to provide an open-source experimental setup capable of operating at those frequencies.

More info

Agile-6G

(AGENTIC AI for 6G mobile networks)

Funded by: Ministerio de Ciencia, Innovación y Universidades, GENERACIÓN DEL CONOCIMIENTO 2024

Duration: September 2025 to August 2028

Today, 6G networks aspire to deliver unprecedented capabilities such as ultra-fast data speeds, sub-millisecond latency, extreme reliability, and ubiquitous global coverage, bringing wireless communications to the level of wired connections. These advances require fast and autonomous decision-making in the programming, control, and orchestration of end-to-end communication systems—requirements that traditional

human-intervention network management techniques cannot meet. Consequently, there is a broad consensus that AI will permeate the entire 6G infrastructure.

Currently, AI models for mobile networks operate as closed, unreliable systems, which is a critical obstacle to their deployment in real networks. Agile-6G is a pioneer in the design of reliable Agentic AI systems adapted to 6G mobile networks. As defined by OpenAI, these systems are capable of pursuing complex goals with minimal human oversight. Unlike traditional AI models, which operate in isolation, Agentic AI systems integrate various learning techniques to achieve autonomy in decision-making, action planning, and learning, all subject to statements of intent established during development. In the 6G ecosystem, these intentions will define the goals, constraints, and safeguards that will guide AI-driven network control and optimization.

By introducing Agentic AI systems into 6G infrastructure, Agile-6G advances AI reliability and adaptability, ensuring that automation aligns with standards of reliability, transparency, and efficiency. This shift is imperative to harness the full potential of 6G, where AI will not just optimize individual components, but will function as an integrated, adaptable, and autonomous system capable of orchestrating network resources on an unprecedented scale

More info

SHIFT

(Cyber Attribution in an Open Set)

Funded by: BBVA Foundation Leonardo Grants for Scientific Research and Cultural Creation call

Duration: July 2025 to December 2027

Cybercrime and the misuse of technology are escalating threats to global security, privacy, and societal stability. While secure system design is essential, persistent flaws—such as the Log4j vulnerability or large-scale disinformation campaigns—reveal the limitations of current approaches. The evolving nature of these threats calls for a paradigm shift. Traditional cybersecurity models fall short when confronted with novel, unforeseen attacks under open-world conditions. SHIFT proposes a transformative research program to address this challenge by exploring how systems can anticipate and adapt to the unknown. The project will develop pioneering methods rooted in uncertainty quantification and adaptive learning, offering a framework that navigates the trade-offs between risk management and the cost of querying oracles for information about unknown threats. This approach departs from closed-world assumptions, opening a novel scientific front that bridges machine learning, security engineering, and forensic science. SHIFT aligns with the spirit of the BBVA Foundation's Leonardo Grants by venturing into unexplored territory at the intersection of theoretical modeling and real-world experimentation. It introduces new scientific principles to enhance the detection and attribution of cyberattacks, pushing the boundaries of secure-by-design systems and contributing to the theoretical foundations of artificial intelligence and criminology. By fostering dialogue between technology, law, and behavioral sciences, this project aims to provide an interdisciplinary toolkit to better understand, prevent, and respond to cyber misconduct—setting the stage for broader societal resilience in the digital age.

More info

UNITE

(Unmanned aerial vehicles for non-terrestrial communications and sensing)

Funded by: European Commision HORIZON EUROPE

Duration: December 2023 to November 2027

Satellites and unmanned aerial vehicles (UAVs) represent a perfect match for non-terrestrial sensing and communications in 6G. Hence, it is of great interest to combine UAVs with satellites to maximize their respective advantages for emerging applications. This project tackles the challenges of using UAV for non-terrestrial communications and non-terrestrial sensing, in combination with satellites, for 6G. The objectives of this research include:

1) Data-driven UAV deployment: to perform intelligent analysis of the spatial and temporal needs for UAV deployment using data mining techniques in important 6G scenarios;

2) Communications and sensing channel modelling: to establish realistic channel models to describe the 3D environment in non-terrestrial applications;

3) Separate non-terrestrial communications and sensing designs: to develop efficient data transmission strategies to ensure the reliable delivery of information and the accurate acquisition of network perception using new channel models, reconfigurable intelligent surfaces and computer vision;

4) Integrated non-terrestrial communications and sensing designs: to devise robust signal processing and networking algorithms to integrate non-terrestrial communications with non-terrestrial sensing using dual-functional waveforms and UAV wireless charging based on the previous separate designs;

5) Sensing-based communications designs: to design effective non-terrestrial communications methods using the network information acquired from non-terrestrial sensing;

6) Disseminate, exploit and communicate the outcomes of this research to the wider community.

Achieving the above measurable objectives will provide crucial inputs to the exploitation of UAVs in non-terrestrial communications and non-terrestrial sensing for 6G by solving its major challenges, which will allow us to address the digital inequality issue and to enhance the terrestrial network functionality.

More info

6G-AI-TANGO

(practical AI for Time-vAryiNG network traffic fOrecasting in 6G)

Funded by: European Commision HORIZON EUROPE

Duration: April 2025 to September 2027

Funded by the European Union

6G-AI-TANGO is a MSCA project funded by the European Union in the call HORIZON-MSCA-2024-PF-01.

To fully exploit the 6G potential and ensure near-zero latency, infinite capacity, and 100% reliability and availability communications, Mobile Network Operators (MNOs) are expected to deploy Zero-touch Network and Service Management (ZSM) solutions that completely automate the resource orchestration and work at a very fast timescale, and Artificial Intelligence (AI) is regarded as the primary enabler for proactive decision-making algorithms that will underpin ZSM.

However, the robustness and trustworthiness of AI predictors are critical aspects and represent one of the major barriers presently withholding MNOs from trusting ZSM technologies. In fact, all existing studies on mobile traffic forecasting work under assumption of stationary network, but, in the case of mobile network Key Performance Indicators (KPIs) prediction, user demands and network configurations are time-varying (non-stationary) in operational mobile networks. For example, antenna configurations or shifts in popularity of mobile applications can happen over time.

Thus, this project is termed “practical AI for Time-vAryiNG network traffic fOrecasting in 6G” (6G-AI-TANGO) and aims to:

(i) assess and quantify the severity of temporal changes (due to non-stationarity) in 6G network KPI forecasting,

(ii) design AI models tailored to mobile KPI forecasting that are resilient to the long-time-scale temporal variations regularly encountered in real-world user demands and network configurations, and

(iii) verify the robustness of proposed predictors on real-word data and in production-grade 6G mobile network during non-academic placement at Telefónica.

More info

GenAI4ED

(A platform for Assessing and Bridging Generative AI and Human Skills in Secondary Education)

Funded by: European Commision HORIZON EUROPE
Duration: October 2024 to September 2027

Future of Education GenAI4Ed

Funded by the European Union

Despite the recent emergence of GenAI and large language models (LLMs), numerous educational tools utilizing these technologies have already been developed, with their numbers expected to increase rapidly. Users of such tools are also growing exponentially. AIbased educational tools, leveraging the capabilities of large language models, usher in a new era of education with personalized tutoring, easy content creation, and automatic grading. As the array of available tools expands, educators must acquire digital competencies to select and evaluate the most suitable options. However, the swift growth in GenAI capabilities raises concerns about their impact on students (e.g., misinformation, increased cheating, ethical and privacy issues) and teachers (reduced social interaction, job displacement, and loss).

The GenAI4ED project aims to address these challenges by developing a digital platform to consider popular AI-based educational software, evaluate various aspects of each tool, and offer the most suitable option for individual teachers and/or students. Notably, the platform

will be employed in pilot experiments in selected schools, whereby students and educators will be asked to evaluate the available tools. Assessment will be based on a predefined set of carefully designed criteria, exploring how such tools affect the student's experience and how they complement the teachers' skills and improve their working conditions. Importantly, through an interdisciplinary approach involving experts in AI, psychology, and ethical concerns as well as teachers and parents, GenAI4ED will utilize the results of the pilot experiments to develop policy recommendations on how to harness the benefits of GenAI tools best to enhance the teaching experience for both students and educators, while protecting the teachers' jobs, improving their working conditions and creating opportunities for new teaching roles.

More info

CYBERACTIONING

Funded by the European Union

CYBERACTIONING

(Training Cybersecurity Skills through Advanced Higher Education Joint Programmes)

Funded by: European Commision DIGITAL EUROPE PROGRAMME

Duration: October 2023 to September 2027

CYBERACTIONING project is originated by a consortium originally formed within the European University Alliance ARQUS, with the addition of five SMEs and a Research Centre, all of them covering four different European countries and with a high level of expertise in the field of cybersecurity. It aims to train professionals in this field through the following initiatives: (a) a joint European Master in cybersecurity with a mobility path along the four universities; (b) a MOOC in cybersecurity aiming at training a minimum of 800 students from non-ICT sectors in each edition; (c) a scholarship programme to attract highly qualified students; (d) a programme of agreements and incentives to attract faculty, companies and research centres and generate synergies; and (e) the acquisition of key technological infrastructure for support of the programmes.

The two training activities (Master and MOOC) have been developed taking into account the main frameworks and recommendations for the development of professional training plans in the field of cybersecurity, such as NICE (National Initiative for Cybersecurity Education) from NIST in the USA or the Joint Task Force (JTF) on cybersecurity, involving ACM, IEEE and other reference organizations. This adaptation of the training initiatives to the actual demands will guarantee an accurate impact in the European and global labour market.

Finally, the project foresees a dissemination plan that ensures the impact of the proposed activities, mainly based on the celebration of a research conference, a programme of agreements with companies and organizations in the cybersecurity sector, a programme of grants for internships and research stays, and a set of initiatives for the dissemination of the training activities promoted by the members of the consortium.

More info

PARASITE

(Methods and techniques to characterize supply chain threats in software)

Funded by: Ministry of Science, Innovation and Universities (GENERACION DEL CONOCIMIENTO 2022)

Duration: September 2023 to August 2027

PARASITE is an ambitious and holistic research effort to create an evidence-based observatory to characterize, model, and analyze the modern software supply chain, its actors, behaviors, and the rampant and diverse range of security and privacy threats targeting them. PARASITE builds on over 20 years of experience and highly impactful research in program testing, cybersecurity, and cybercrime. It aims to push the boundaries of our understanding of the supply chain and its socio-technical ramifications and implications. Our approach will address the current set of challenges and limitations of existing static and dynamic analysis methods for understanding the supply chain and its inherent risks. Specifically, existing static analysis methods to identify dependencies in compiled and packaged software need to address challenges arising from differing versions of compilation toolchains, target architecture, optimization, and other compile-time configuration which substantially alter the final artifact of software production from its source code. Additionally, we have no methods to attribute and identify vulnerabilities in modern programs, as most analysis methods consider them as monolithic objects rather than multiparty ones.

More info

MultiX

(Advancing 6G-RAN through multi-technology, multi-sensor fusion, multi-band and multi-static perception)

Funded by: European Commision HORIZON-JU-SNS-2024

Duration: January 2025 to June 2027

The MultiX project aims to revolutionize the 3GPP Radio Access Network (RAN) design and operation by developing a pioneering MultiX fusion Perceptive 6G-RAN system (MP6R) that will support an integrated multi-sensor, multi-static, multi-band, and multitechnology paradigm to enable multi-sensorial perception for future 6G sensing applications. The MP6R builds on top of three innovation pillars: i) MultiX Perception System (MPS) that introduces 3 levels of sensing functions into the RAN stack to support multisensor, multi-band, multi-static, and multi-technology Integrated Sensing and Communication (ISAC), following a streamlined functional split architecture to enable a fully flexible ISAC deployment in 6G-RAN and to facilitate vendors to extend their RAN stack to support sensing in a plug & play manner; ii) MP6R controller (MP6RC) that extends the RAN control plane functionalities to coordinate and control multi-technology integration (including 3GPP, non-3GPP, and other sensor technologies such as Radar, LiDAR, camera, etc.), while considering new connectivity approaches as well as mobility challenges for sensing and

Funded by the European Union

localization services; and iii) Data Access and Security Hub (DASH) designed as a novel RAN data plane entity that aggregates multi-sensor data of diverse technologies, providing secure data access, processing, storage, and exposure, ensuring data privacy and trustworthiness, and that can be fully distributed throughout the data plane wherever needed in the 6G-RAN. The proposed MP6R RAN design, and a set of other selected innovations, will be validated and demonstrated in two specific Proof-of-Concepts (PoCs) targeting TRL 4-5: PoC#1) Multi-layer Network Digital Twin for Industrial Manufacturing and PoC#2) Contact-free eHealth Monitoring at Home Environment. In addition, MultiX also aims to shape 6G standardization for achieving maximum sustainability and impact by contributing to relevant SDOs, including 3GPP, IEEE, ETSI ISAC.

More info

ORIGAMI

(Optimized resource integration and global architecture for mobile infrastructure for 6G)

Funded by: European Commision HORIZON-JU-SNS-2023

Duration: January 2024 to December 2026

Funded by the European Union

ORIGAMI aims at spearheading the next-generation of mobile network architecture, overcoming eight factual barriers to ensure a successful 6G future. With three critical architectural innovations – Global Service-based Architecture (GSBA), Zero-Trust Exposure Layer (ZTL), and Compute Continuum Layer (CCL) – ORIGAMI strives to create global single standards, promote green transition, boost affordability and accessibility, and inspire ground-breaking applications and fresh business models.

To assess ORIGAMI's effectiveness, the project will carry out eight real-world demonstrations across six experimental sites and two large-scale international datasets from two major operators and validate our findings against twelve ambitious KPI targets.

The GSBA proposed by ORIGAMI will streamline communication and interoperability across network planes, paving the way for truly global standards. The AI-aided CCL will democratize access to extremely heterogeneous computing resources and will boost resource sharing with reliability guarantees, encouraging green transition, sustainability and greater accessibility. In turn, the ZTL will enable third-party players to securely program their virtual networks in zero-trust arenas, driving innovative high-value applications and creative business models.

ORIGAMI's emphasis on dependable, explainable, and unbiased AI/ML will ensure a reliable system that avoids corner case errors, setting the stage for a more connected, efficient, and sustainable telecommunications future.

More info

GERMINAL

(Connectivity: Enabling Next Generation NAV/COM Hybrid Terminal)

Funded by: EUSPA, EU Agency for the Space Programme

Duration: June 2024 to November 2026

GERMINAL action has received funding from the European Union (EUSPA/GRANT/06/2022)

The main objective of the E-GNSS programmes is to maximize socio-economic benefits for European citizens of European satellite navigation systems. As a consequence, more cost-efficient solutions are targeted together with encouraging the penetration of E-GNSS into the connectivity domain and the other way around use Communication technology to support positioning. One of the key issues to ensure a favourable reception from the user communities of E-GNSS technology and its evolutions is to provide clear added value from other alternatives (technology competitors) and to achieve this, the availability of products implementing such valuable capabilities in a proper way is a clear need.

One of the current EU financial mechanisms/instruments to encourage the development of market-ready GNSS-products is the Fundamental Elements, to which this GSA/GRANT/06/2022 call belongs. Under Fundamental Elements programme, the goal is to support the development of E-GNSS-enabled chipsets, receivers and antennas, to facilitate the adoption of E-GNSS systems, improve the competitiveness of EU industry, address user needs and maximize benefits to EU citizens.

GNSS includes constellations of satellites orbiting around the Earth that broadcast their locations in space and time, and receivers computing ground positions by trilateration. GNSS are used in different transportation domains: aviation, maritime, rail, road or UAVs and a great number of applications rely on PNT services provided by GNSS. Galileo, probably, the brightest element of the European Union Space Programme, is a civilian Global Navigation Satellite System intended to provide robust navigation services. GNSS users utilizing Galileo experience a significant improvement in terms of performance and capabilities.

On the other hand, the number of connected devices is growing dramatically and the importance of locating devices has very much increased. It is not only relevant the location of the asset itself but also, the solution owner be able to locate all assets at the same time with minimum power consumption. Thus, integrating TN and NTN has the potential of connecting the unconnected.

Thus, this project focuses on the combination of these two worlds, PNT Systems and Connectivity Systems. This Project is devoted to the integration of GNSS (Galileo), other PNT sources and Connectivity Systems.

More info

DRONAC

(Distributed Reliable Objects for Networked Applications Coordination)

Funded by: Ministry of Science, Innovation and Universities (GENERACION DEL CONOCIMIENTO 2022)

Duration: September 2023 to August 2026

Over the past decade, blockchains have come to the fore as tools for coordinating entities with very different and possibly competing interests that benefit from working together. Current blockchain systems maintain a reliable storage of data, organised as a fully ordered sequence of transactions, and only provide eventual consistency to access it. However, we believe there are many alternatives to explore beyond this usual service. In one dimension, the total order between transactions imposed by the ledger is useful, but at the cost of having to solve distributed consensus, which limits scalability. Some applications may not need the transactions to be fully ordered, and could coordinate with weaker order guarantees such as no order, DAG orders, or barriers (setchains). In another dimension, applications may want a stronger level of consistency than eventual consistency, such as linearizability, sequential consistency, or causal consistency.

In this project, we intend to enrich the distributed ledger ecosystem with several alternative types of reliable distributed storage objects that allow data records to be stored and read. Reliable distributed storage objects will be Byzantine fault tolerant and provide persistent and immutable storage. The quality of service (or type) of a reliable distributed object will be defined by the two dimensions presented above: order and consistency guarantees. This will allow applications that need to coordinate to share records with the appropriate level of order guarantees and the desired type of consistency.

The practical interest of these objects will be illustrated by three practical application scenarios that require the implementation of computing and networked services: (a) coordination of electricity producers and consumers, (b) coordination of platoons of autonomous vehicles using edge computing, and (c) construction of machine learning models for assisted driving using federated learning.

More info

6TH SENSE-ELSA

(6G location and sensing-based analytics)

Funded by: Ministry of Science, Innovation and Universities (GENERACION DEL CONOCIMIENTO 2022)

Duration: September 2023 to August 2026

Localization has achieved great attention in 5G networks, and was strongly pushed by the 3rd Generation Partnership Project (3GPP) for standardization. This area of innovation thrives: according to market research studies, the market size of Location-Based Services (LBS) is expected to grow at a Compound Annual Growth Rate of 17.6% during the period 2022-2027.

Location is now one of the most active areas of standardization in 3GPP, and new releases of the standards promise to further enable new techniques for accurate and fast positioning toward 6G networks. In parallel, higher spectral bandwidths will provide better range resolutionfor processing received signals reflected off objects, thus enabling precise environmental sensing and localization. Finally, MachineLearning (ML) and artificial intelligence are playing an increasing role in 5G, and are expected to play an even greater role in 6G networks. Localizing and sensing 6G terminals, people and things accurately and reliably will allow network operators to design innovative servicesfor new stakeholders. At national level, the strategic line “Internet de la próxima generación” will greatly benefit from advancing theknowledge in location, sensing, and analytics for developing future cellular networks.

Despite the large standardization effort and expectations for future cellular generations, the lack of experimental studies in cellular locationand sensing limits the scientific impact and innovation in this area. 6G-ELSA aims to fill this gap, studying the key scientific and technological enablers of future cellular network for location and sensing-based analytics. 6G-ELSA will provide an end-to-end integratedplatform for enhanced localization and sensing. To this end, departing from currently available 5G software, 6G-ELSA will make holistic contributions at all layers of the protocol stack, from the core network all the way down to the physical layer in the radio access, providing analytics for external stakeholders.

In order to advance the knowledge and foster adoption of the developed results, the research and development of the project will be driven by an important example use case that we expect in future cellular networks on localization and environment sensing for fine-grained human activity recognition and new user interactions.

The project consists of two Scientific and Technical (S&T) work packages, one on architecture, use cases and demonstrations, and one on management. The research methodology of the project is set up as follows: i) the research will be performed on key S&T enablers identified at the time of the proposal and that we will address in WP1 and WP2; ii) all the research in the project will be related to common reference architecture and use case on human activity recognition, identified and used by all research domains; iii) selected technology components developed during the project will be integrated in proof-of-concept demonstrations (in WP3): we will integrate the different components under a single 5G-NR open platform and demonstrate the potential of 6G for sensing and positioning services. We will test individual components first in isolation and then we will validate the integrated platform as a whole as indicated in the implementation plan.

More info

6G-IRONWARE

(Time-resilient mobile network traffic forecasting in 6G)

Funded by: Ministry of Science, Innovation and Universities (CONSOLIDACIÓN INVESTIGADORA 2023)

Duration: April 2024 to June 2026

The vision for sixth-generation (6G) mobile networks sets extraordinarily high bars for future communication systems, which shall meet outstanding performance requirements, including near-zero latency, apparent infinite capacity, and 100% reliability and availability that will make the communication infrastructure fully transparent to the applications. In order to meet these ambitious goals, 6G networks are expected to complete the transition to full virtualization, with the vast majority of network functions running in dedicated telco Clouds on top of an open and programmable user plane.

To fulfil the potential of 6G systems to instantly orchestrate resources and Virtual Network Functions (VNFs) across a tangled multi-domain network infrastructure. 6G networks shall integrate Zero-touch Network and Service Management (ZSM) solutions capable of completely automating the resource and VNF orchestration process, pushing network management operations to very fast timescales (e.g., of milliseconds to minutes) not achievable by traditional human-in-the-loop approaches. Artificial Intelligence (AI) is widely regarded as the primary enabler for the decision-making algorithm that will underpin ZSM, and the success of 6G as a technology may ultimately depend on the quality of the AI that will de-facto manage the infrastructure by autonomously taking and enacting operational decisions at schedulers, controllers, and orchestrators across network domains. In particular, AI models are expected to provide prompt and efficient support for anticipatory MANO, i.e., adopt decisions that proactively address future shifts in the user demands, which is an ostensibly more effective approach than reactive policing, and is instrumental to unlocking the full benefits of automation. This clearly calls for the design of AI models tailored for the forecast of key performance indicators (KPIs) of network traffic, and indeed a large number of AI predictors have been proposed that outperform traditional methods based on statistical modeling in varied traffic forecasting tasks.

However, for AI predictors to be deployed in production-grade operational systems serving millions of users, robustness is critical, and, in fact, one of the major barriers presently withholding MNOs from trusting ZSM technologies. In the case of mobile network KPI prediction, it is paramount not only that forecasts are accurate upon deployment, but also that they stay so overtime. The task is not obvious, since both user demands and network configurations are time-varying, due to the adoption of new services, shifts in the popularity of mobile applications, availability of faster communication technologies, network configurations changes, deployment of additional carriers, or decommissioning of old antennas. These phenomena occur over timescales of weeks and are characterized

by a combination of steady trends and abrupt events. Practical AI predictors shall be able to cope with these complex temporal dynamics and retain their forecasting quality despite the underlying system changes

6G-IRONWARE targets precisely the development of AI models for time-resilient mobile network traffic forecasting in 6G, via the design of custom predictors that are robust to (i) temporal drifts in user demands and (ii) updates to the network configuration over time.

More info

ESFRI-SLICES-CM 2025

(Large-scale scientific infrastructure for experimental studies in computing/communication)

Funded by: Regional Government of Madrid

Duration: January 2025 to June 2026

The IMDEA Networks Foundation, in addition to activities related to its own research lines, is participating in the ESFRI (European Strategy Forum on Research Infrastructure) initiative called SLICES (Scientific Large-scale Infrastructure for Computing/Communication Experimental Studies). SLICES will provide a cutting-edge experimental platform for research and experimentation in key areas such as 5G/6G, the Internet of Things (IoT), cybersecurity, and cloud computing.

The development of the ESFRI SLICES node in Madrid aims to deploy an advanced 5G and 6G experimentation infrastructure, offering a catalog of resources and services available to the research community not only at the national level but also internationally. The ESFRI SLICES network is expected to consist of 20 to 30 nodes, located in different European countries (two of them in Spain—in addition to the node in the Community of Madrid, a second node is being deployed in the Basque Country). These nodes will be interconnected, forming a pan-European platform for experimentation and research in advanced networks.

The planned actions for 2025 in the SLICES-Madrid laboratory include five key initiatives: (i) maintenance and extension of the services provided by SLICES-Madrid through the hiring of qualified personnel, (ii) acquisition and maintenance of a NVIDIA DGX-H200 node as specialized equipment for Artificial Intelligence (AI) and Machine Learning (ML) training, (iii) construction of a cage for drone experimentation and an infrastructure for Autonomous Guided Vehicles (AGVs), (iv) co-financing Spain's membership fee for SLICES ERIC, and (v) maintenance and expansion of the data storage system and server connectivity required for access to and management of the infrastructure.

More info

ADVANCE-6G

(Scientific infrastructure of computing and communications for advanced experimentation in 6G networks)

Funded by: Ministry of Digital Transformation and Public Service (UNICO INFRAESTRUCTURAS 2022) and European Union NextGeneration-EU
Duration: September 2022 to December 2025

The next technological revolution in the field of communications networks will be the sixth-generation mobile networks, or 6G networks. IMDEA Networks is playing a determining role in the development of this new technological paradigm, leading several pioneering projects of 6G technology, developing cutting-edge lines of research and playing a determining role in the SNS JU (Small Network and Services Joint Undertaking), a Large-scale European public-private initiative to research and develop advanced 5G and 6G technologies. However, in order to continue playing this role and ensure that Spain has a relevant role in research in this revolutionary field, it is essential to have a leading experimental platform at a global level that allows the evaluation and validation of new disruptive ideas and new technologies in the field of 6G networks, thus ensuring their practical viability. In order to create this unique experimental platform, IMDEA Networks participates in the SLICES-RI research infrastructure (www.slices-ri.eu) included in the ESFRI Roadmap 2021. IMDEA Networks has contributed since its inception to SLICES-RI and has a relevant role, managing the node of the 5TONIC laboratory (www.5tonic.org) integrated into SLICES-RI.

ADVANCE_6G aims to provide the scientific and technological infrastructure and equipment that will allow 5TONIC to address, in an integrated manner with SLICES-RI, an infrastructure for experimentation in advanced 5G and 6G, offering a catalog of resources and services available to the research community, not only nationally but also internationally.

More info

INES

(Intelligent Networks for Enhanced 6g Services)

Funded by: Ministry of Digital Transformation and Public Service (UNICO INFRAESTRUCTURAS 2023) and European Union NextGeneration-EU
Duration: April 2023 to December 2025

The next generation of networks will need to be extremely agile and highly reconfigurable to meet the demanding requirements imposed by emerging complex use cases. The 6G network will have to be self-controllable at much finer levels than the 5G network to realize different services such as the metaverse and the Internet of Things (IoT). To this end, significant improvements will need to be made to multiple wireless radio access technologies, including LoRa, millimeter-wave transmission, and THz, the core network, and

auxiliary infrastructure to ensure higher performance and greater reliability. Furthermore, complex strategies employing the latest ML/AI technologies will be needed to manage and orchestrate resources so they can be optimally shared among different services. Due to this inevitable resource sharing among services, security and privacy must be organically integrated into its design.

INES aims to design, build, and test an intelligent end-to-end network suitable for developing scenarios that integrate IoT and cyber-physical systems. In doing so, IMDEA Networks will create a network capable of fulfilling the promises of 6G by providing new and unique tools to the scientific community through its various national and international collaborations, highlighting its participation in the 5TONIC laboratory (www.5tonic.org).

More info

TEST-6G

(Scientific infrastructure for technical testing on B5G and 6G networks)

Funded by: Ministry of Digital Transformation and Public Service (UNICO INFRAESTRUCTURAS 2023) and European Union NextGeneration-EU
Duration: April 2023 to December 2025

The design of sixth-generation (6G) mobile networks has recently begun. The research, innovation, and co-creation laboratory 5TONIC, founded by the IMDEA Networks Institute—where its main headquarters are also located—and Telefonica, and of which such relevant entities in the development of 5G and 6G as Ericsson, Capgemini, Comscope, and Carlos III University of Madrid are also members, is playing a decisive role in the development of this new technological paradigm, leading several precursor projects of 6G technology. 5TONIC also develops cutting-edge research lines, having a significant presence in the SNS JU (Small Network and Services Joint Undertaking), a large-scale European public-private initiative for researching and developing advanced 5G and 6G technologies. However, to continue playing this role and ensure that Spain has a relevant role in research in this revolutionary field, it is essential to continue developing world-class experimental platforms that allow the evaluation and validation of new disruptive ideas and technologies in the field of 6G networks, such as the one hosted at IMDEA Networks/5TONIC, thus ensuring its practical viability. With the aim of creating this unique experimental platform, IMDEA Networks manages the 5TONIC laboratory node integrated into SLICES-RI (included in the ESFRI Roadmap 2021).

TEST-6G's main objective is to extend the infrastructure and scientific and technological equipment that will allow 5TONIC, together with SLICES-RI, to address an experimentation infrastructure in advanced 5G and 6G in an integrated manner, offering a catalog of resources and services available to the research community, not only at the national

level but also internationally. The project focuses on three fundamental technical areas: deterministic networks, the use of artificial intelligence in 6G mobile networks, and open virtualized and programmable networks, for which the acquisition of various equipment is proposed to build an experimental network infrastructure that supports these types of applications. The need to manage access to this infrastructure, define the experiments to be carried out, and obtain the results thereof is also considered, for which the acquisition of measurement equipment and support for the development of functionalities in the network are proposed.

More info

MLEDGE

(Cloud and Edge Machine Learning)

Funded by: Ministry of Economic Affairs and Digital Transformation (UNICO CLOUD 2022)
Duration: January 2023 to December 2025

Data-driven decision-making powered by Machine Learning (ML) algorithms is changing the way society and the economy work and is having a profound positive impact on our daily lives. In fact, ML applications are becoming even more ubiquitous and integrated, often invisibly, into our daily activities, having a direct impact on things like how we find our way around a city, how we decide what to buy or where to eat, while at the same time we can keep ourselves safe from financial fraud, or have tools that remind us to take medication or suggest new personalized habits for a healthier lifestyle.

However, for ML-based solutions to be effective at such tasks, data often has to be processed close to the end user. Furthermore, such data may be private and of a confidential nature. Distributed Learning and, in particular, Federated Learning (FL:

Federated Learning) emerges as a leading paradigm within the ML branch satisfying these two properties. FL has grown in parallel with the expansion of cloud to the edge (CloudEdge) but, interestingly, both paradigms have mostly developed independently, despite their natural parallelism and potential synergistic gains.

In this project, Cloud and Edge Machine Learning (MLEDGE), we will work to reverse this trend by deploying FL as a standalone but optimized cross-industry layer on top of Cloud-Edge, using real-world data and applications to demonstrate that this synergy can produce great benefits for all. MLEDGE aims to enable a thriving ecosystem of secure and efficient ML edge services capable of facilitating the use of sensitive personal and B2B data to train ML models for consumers while protecting the privacy of the data and its owners. Recent studies in the field of the “European Data Strategy” estimated that the data economy will reach an impact of 827 billion euros for the EU27 as early as 2025. However, even today

privacy concerns and property hinder their full development. MLEDGE will be instrumental in increasing these projections in the period 2025-2030.

More info

PROMIN

(IMDEA Network's plan for attracting talent and promoting degrees related to telecommunications, at national and international level)

Funded by: Ministry of Digital Transformation and Public Service (UNICO 2021) and European Union NextGeneration-EU

Duration: January 2022 to December 2025

The main objective of the Plan for the Promotion of Telecommunications Studies (PPET) is to attract talent to telecommunications studies, thus helping to solve the shortage of talent in technologies such as advanced 5G and 6G, which are essential for research centers and industries.

This plan will deploy a series of actions for the dissemination of these studies among the different levels of students, so as to improve the attraction of good students to them, while emphasizing the incorporation of female talent, currently at very low levels, and international students for the master's and doctoral levels.

This promotion plan is considered unique, and the deployment of actions to be carried out will be developed throughout Spain, beyond the geographical scope or action of each of the beneficiary entities of the PPTE.

More info

INCREASE-HE

(Grants to increase the participation in of IMDEA Networks in Horizon Europe)

Funded by: Ministry of Science, Innovation and Universities (AYUDAS PARA LA GESTION Y PREPARACIÓN DE PROYECTOS EUROPEOS 2022)

Duration: January 2023 to December 2025

The "INCREASE-HE" Project aims to strengthen IMDEA Networks Institute resources to increase its already high success rate in the new European Union Work Program, Horizon Europe.

IMDEA Networks is a public Research Institute of the Community of Madrid focused on ICT and networks areas, founded in 2006. The Institute has a clear internationalization strategy, one of its principles being the participation in the European Union research programs and the attraction of international talent, a task in which it has obtained excellent results,

especially taking into account its small volume and recent creation. It is also noteworthy its effort on technological transference both to the industry and to society, with an extensive network of collaborators, including some of the top research groups in its area.

IMDEA Networks has had a project management department since 2007 that currently employs three Projects managers. The department offers support to the research team in all phases of their projects, from the search for financing, going through the preparation and presentation of proposals, the economic and financial management of the projects awarded up until their justification and closure. To this end, it has carried out a continuous training plan in matters of interest such as the management of European Union funds and projects. The growing volume of the research team has increased the ability to attract external funds from IMDEA Networks, which obtains half of its annual funding through competitive calls and projects with the industry. This represents a challenge for the Projects and Funding Department in the mid-term, making it necessary to obtain funds to reinforce the project management infrastructure and thus guarantee adequate support for the research team. In addition to this, the recent publication of the new Horizon Europe program requires an additional effort to adapt the Institute's procedures to its new requirements and priority lines.

As a result, IMDEA Networks has identified four priority axes to intensify its participation and success in the new EU Work Program. First, the aim will be to increase the returns from European projects by improving the training of research staff and offering a dedicated service to support the preparation of proposals. Secondly, the coordination of projects will be promoted by hiring a new project manager to support the management of such projects and carry out dissemination to encourage coordination.

Thirdly, it is proposed to go one step further and promoting excellence by supporting the preparation of ERC proposals, the training of management staff in Horizon Europe and the development of new computer tools suitable for the management of European projects. Finally, it is intended to exploit the potential IMDEA Networks has to attract other Spanish R+D+i agents to Horizon Europe through the organization of Conferences, brokerage events, the use of partner search tools and its participation in networking activities.

More info

MADQUANTUM-CM

(Quantum Communication in the Autonomous Region of Madrid)

Funded by: The Regional Government of Madrid through the Spanish Plan for Recovery, Transformation and Resilience and the NextGeneration EU Funds from European Union.
Duration: January 2022 to December 2025

The overall objective of the project is to structure and coordinate Quantum Communications R+D+i capacities of the Community of Madrid (CM), among themselves and with

other Autonomous Communities with common interests, within the framework of the Complementary Plan for Quantum Communication whose main objective is the alignment of Spain with the key European initiatives in the field of Quantum Communication, both the Quantum Flagship and the EuroQCI. MADQuantum-CM project develops the participation of the Community of Madrid in the Complementary Plan for Quantum Communication, contributing to its scientific-technological objectives as well as the creation of talent and the industrial ecosystem, through 7 scientific-technical lines:

- Line 1: EuroQCI – Towards a European Quantum Communications Infrastructure
- Line 2: Hardware for quantum communications
- Line 3: Software for quantum communications
- Line 4: Hardware for quantum processing
- Line 5: Software for quantum processing
- Line 6: Human Resources and training for innovation and entrepreneurship
- Line 7: Innovation and industrial ecosystem, dissemination and exploitation of results

The main line of the project is line 1, in which technological developments and deployments will be carried out to contribute to the first objectives defined in the European programs: the creation of a high-security communications network, resistant to any computer attack, orchestrated either through classical or quantum means.

Line 2 will contribute to the development of line 1 through hardware developments for quantum communication, first for fiber systems, considering both technologies easier to integrate in the network and to industrialize (Continuous Variables), as well as those more optimal for long distances/rates (Discrete Variables) and secondly for free space, which includes satellites, foreseeing the space segment that will be necessary in the EuroQCI for very long-distance communications in the short/medium term, and communications with an unmanned aerial vehicle (UAV). Likewise, within this line, technology based on entanglement will be developed, including quantum repeaters for Quantum Communications for long distances (>300 km) over optical fibers.

Line 3 will focus on systems and new protocols with advantages in terms of security, distance and functionality, as well as security studies of experimental systems and their integration into the networks.

Quantum Communications, however, not only produce secure systems, but their ultimate goal is also the ability to create quantum correlations between any two points in the network. These quantum processing technologies will be developed in lines 4 and 5. The main applications of these developments may be: ultra-precise distribution of time signals, quantum sensors, distributed quantum computing, etc.

Finally, lines 6 and 7 aim to educate and train researchers, by hiring research personnel in their different stages of training and generate human capacities for the development of a national industry that covers the entire value chain around quantum communications.

More info

DATABRI-X

(Data Process & Technological Bricks for expanding digital value creation in European Data Spaces)

Funded by: European Union HORIZON EUROPE

Duration: October 2022 to September 2025

Funded by the European Union

The emergent European Data Economy relies on the availability of data as a basis for further innovation and exponential development of technologies, especially the development of trustworthy 'made in Europe' AI that reflects European values. Data Spaces, platforms and marketplaces are enablers, key to unleash the potential of such data. However, data sharing and data interoperability are still at their infancy. Through DataBri-X, European Data Spaces, platforms and marketplaces and their wide range of business, governmental and public, research and civil society stakeholders will be equipped with a holistic and flexible data governance process and a seamless integrated standards based toolbox for data- and metadata management which can be assembled along relevant requirements, provides open source as well as commercial tools (the bricks / bri-X), and mechanisms to load 3rd party resources like language resources or AI models, and can be easily deployed into Data Spaces and thereby will contribute to make Europe the most successful area in the world in terms of data sharing and data re-use, to gain the full benefit from the value of data, while respecting the legal framework relating to security and privacy. The project's objective is to provide a holistic, energy-efficient and user-friendly toolbox of practical, robust and scalable bricks/Bri-X (processes, technologies and tools) that improve the interoperability, usability, discoverability, quality, and integrity of data and metadata, with the aim of making data sets ready for expanded digital value creation in the context of European Data Spaces. The DataBri-X toolbox will be offered in compliance with accountability, fairness, privacy, and confidentiality regulations as well as FAIR principles and will build on existing and emerging initiatives. The DataBri-X consortium comprises 14 partners from 6 EU members and 1 associated country (UK), that together form a complete value chain of actors.

More info

BRAIN

(Explainable and robust AI for integration in next generation networked systems)

Funded by: Ministry of Science, Innovation and Universities (GENERACIÓN DEL CONOCIMIENTO 2021)
Duration: September 2022 to August 2025

Fifth-generation (5G) networks are now entering a stable phase in terms of system architecture and commercial release, and the identification of the advanced features that will shape the evolution of 5G into the sixth generation (6G) of mobile network systems has already started. Despite being at early stages of conceptualization, some key aspects of the future infrastructure have been identified by the community: 6G will bring a paradigm shift from connected things to connected intelligence, supporting even more stringent KPI requirements than 5G, and global coverage (air, ground, and underwater). Therefore, there are strong expectations that Artificial Intelligence (AI) will permeate the 6G network infrastructure, allowing for much swifter and more effective decision-making in scheduling, control and orchestration operations of the end-to-end communication systems. Ultimately, this will allow 6G to support ambitious performance targets such as near-zero latency, apparent infinite capacity, or 100% reliability and availability, so as to support new and diverse classes of innovative mobile services.

The BRAIN project will contribute to making this vision of 6G as a network augmented via pervasive artificial intelligence a reality, by addressing the two main roadblocks. On the one hand, existing AI models employed for network management are black boxes, and their complete lack of transparency is a clear barrier for adoption: here, BRAIN aims at proposing new AI tools for network management that are explainable and trustworthy by design and specifications on robustness that allow to benchmark existing AI models. On the other hand, the disruptive softwarization of the network architecture has opened new opportunities for a deep integration of AI into the future 6G infrastructure that have yet to be explored: here, BRAIN will investigate novel approaches for the design, implementation and evaluation of in-band network intelligence, i.e., AI models that run directly into the user-plane programmable switches, operating at line rate over the transiting data traffic, and laying the foundations to a truly AI-native 6G network..

More info

MAP-6G

(Machine Learning-based Privacy Preserving Analytics for 6G Mobile Networks)

Funded by: Ministry of Economic Affairs and Digital Transformation (UNICO 2021) and European Union NextGeneration-EU

Duration: January 2022 to March 2025

Although there is not a unique understanding of what 6G will be, several initiatives are ongoing that have put forward highly advanced visions of potential concepts and preliminary technologies that will form 6G networks. With the current deployment of 5G networks, high data rate and low latency are provided for communication, in addition to some first steps towards deployments that also provide commercial localization services. 6G mobile networks, however, will go far beyond the use cases that can be covered by 5G, enabling not only significantly improved network performance but also substantially more complex services that rely on location and context information gathered by the network. In particular, 6G mobile networks will enable orders of magnitude higher localization accuracy and lower latency than prior technologies. This will be a unique opportunity to design new services and analytics, but also a threat for privacy. For this reason, this project will design native privacy-preserving machine learning mechanisms for 6G networks in order to manage the massive amount of data generated by services in 6G networks, based on emerging Federated Learning techniques. The final demonstrator will integrate the developed modules within the mobile network and will be demonstrated using testbeds comprising data servers, edge nodes and end-user devices.

More info

RISC-6G

(Reconfigurable Intelligent Surfaces and Low-power Technologies for Communication and Sensing in 6G Mobile Networks)

Funded by: Ministry of Economic Affairs and Digital Transformation (UNICO 2021) and European Union NextGeneration-EU.

Duration: January 2022 to March 2025

The mobile communication industry is one of the few industry sectors that has been growing at a very fast pace for more than three decades. 5G mobile networks promised to change our modern society and vertical industries and are now gradually being rolled out commercially. The research focus is now shifting towards sixth generation (6G) mobile systems and architectures. While 5G is largely used for communications, 6G mobile networks will go far beyond 5G use cases, involving a vastly larger number of connected devices, significantly higher performance requirements, and support for detailed object and environment sensing in addition to communication. To this end, 6G networks will need to embrace new con-

cepts and capabilities. The overall objective of this project is to integrate such crucial new technologies into 6G to improve wireless communications, provide environmental sensing, and significantly lower the per-device energy footprint to avoid a vast increase in overall network power consumption. We will take a holistic approach, harnessing reconfigurable intelligent surfaces, visible light communication, and RF backscatter, that 6G networks will use. This project is timely, as the solutions that we will design during the project (concluding in December 2024) can be incorporated in the pre-6G systems that are expected to be ready for deployment around the same time, and in line with the roadmap proposed by the 5G Infrastructure Association (5GIA) and the Sustainable Development Goals set by the United Nations. We plan to provide one final demonstrator in collaboration with industry partners of the consortium, integrating communication, sensing and low-power design for the important and emerging use case of the Internet of Everything.

More info

ESFRI-SLICES-CM 2024

(Large-scale scientific infrastructure for experimental studies in computing/communication)

Funded by: Regional Government of Madrid

Duration: January 2024 to March 2025

Comunidad de Madrid

The development of the SLICES 5TONIC node aims to deploy an advanced 5G and 6G experimentation infrastructure, offering a catalogue of resources and services available to the research community, not only nationally but also internationally. The main objectives during 2024 are threefold: (i) maintenance and extension of the SLICES blueprint for data processing with AI/ML techniques, (ii) use of channel emulator support equipment to generate multiple emulation channels with different parameters and as support for different wireless communication technologies and standards in the context of the SLICES node in Madrid, (iii) implementation of two transceiver nodes that allow the design and implementation of communication systems operating at wavelength frequencies looking for the best alternatives to 6G systems, and (iv) maintenance, configuration and extension of the infrastructure, equipment and personnel necessary for data storage generated by the SLICES node in Madrid.

More info

ECOMOME

(Energy consumption measurements and optimization in mobile networks)

Funded by: Ministry of Science, Innovation and Universities PROYECTOS DE COLABORACIÓN INTERNACIONAL 2022.
Duration: February 2022 to January 2025

The energy consumption of mobile networks has been the source of animated debates in the recent period, with the deployment of 5G technologies. However, the energy consumption estimations put forward by the different parties in the debate showed significant differences, up to two orders of magnitude. This is a result of a lack of accurate models and meaningful metrics in this field. More precisely, the control plane of a mobile network represents a significant share of the traffic exchanged between the user and the network infrastructure, much more than in any other network technology, and this role will become even more important with the development of network function virtualisation and orchestration. Models focusing on the application-level traffic are bound to make harsh approximations, leading to results that cannot really help the involved parties.

Project ECOMOME addresses this problem of accurately modelling and optimizing the energy consumption of a mobile network, with a focus on 4G and 5G technologies. This will be achieved through three main research axes. The first contribution will be represented by the first independent measurement study of energy consumption in a mobile network. We will address both user equipment and the radio access network, conducting a network metrology study on real operational networks and on experimental testbeds. The measurement data collected in this campaign will represent the input for other contributions in the project, but it will also be made openly available to the research community.

The second objective of the project is to use this measurement data in order to design accurate energy consumption models for mobile networks. In this sense, we take an original approach with respect to the literature, by focusing on modelling the impact of the building blocks of the mobile network, a series of “atomic” network mechanisms and functions which practically compose any service scenario and any user context. Modelling these atomic network mechanisms requires a detailed knowledge of the way a mobile network functions but then allows the accurate modelling of any general scenario.

Finally, the project also targets the proposal of energy efficient networking solutions. Indeed, the measurement data and the energy consumption models will allow us to detect the most energy-hungry phases in a mobile network. To reduce their impact, we will propose network intelligence solutions, which are based on observing the traffic transported by the network, detecting whenever the network settings are over-consuming, and adapting the network configuration with energy efficiency metrics in mind.

More info

scientific activities

annual report 2025

www.networks.imdea.org

IMDEA Networks Institute monitors and evaluates its scientific results in order to obtain a sound appraisal of the degree of fulfillment of its strategy and objectives, optimizing the management of its resources and maximizing its impact. The pursuit of excellence is at the core of all of our activities.

5.1. Awards

5.1.1. Paper Awards

1. BEST POSTER AWARD

NetMob 2025, 8-10 October, Paris, France (October 2025)

Orlando E. Martínez-Durive, Stefanos Bakirtzis, Cezary Ziemlicki, Marco Fiore

Modeling Base Station Metadata Geolocation

2. CNIL-INRIA PRIVACY AWARD 2025 – RUNNER-UP

Usenix Security Symposium. Anaheim, CA, USA. August 2023 (July 2025)

Allan Lyons, Julien Gamba, Austin Shawaga, Joel Reardon, Juan Tapiador, Serge Egelman, Narseo Vallina-Rodríguez

Log: It's big, it's heavy, it's filled with personal data! Measuring the logging of sensitive information in the Android ecosystem

3. BEST PAPER AWARD

36th International Teletraffic Congress (ITC 36), 2-5 June 2025, Trondheim, Norway (June 2025)

Diletta Olliaro, Michela Meo, Matteo Sereno, Andrea Marin, Marco Ajmone Marsan

"Energy/Performance Trade-Off in RANS with Dynamic Management of Frequency Bands"

4. BEST PAPER AWARD

IEEE INFOCOM 2025, 19-22 May 2025, London, UK (May 2025)

Beyza Bütün, David de Andrés Hernández, Michele Gucciardo, Marco Fiore

DUNE: Distributed Inference in the User Plane

5. BEST STUDENT PAPER AWARD

IEEE International Conference on Machine Learning for Communication and Networking 2025, 26-29 May, Barcelona, España (May 2025)

Serly Moghadas Gholian, Claudio Fiandrino, and Joerg Widmer

A scalable DNN (Deep Neural Network) Training Framework for Traffic Forecasting in Mobile Networks

5.1.2. Researcher Awards

EXTRAORDINARY DOCTORAL AWARD - UC3M

Aristide Tanyi Jong Akem (December 2025)

Aristide Tanyi-Jong Akem has received this award for his doctoral thesis entitled "User-Plane Algorithms for Stateless and Stateful Inference in Programmable Networks," in the category of the PhD Programme in Telematics Engineering. The thesis was supervised by Marco Fiore.

DONALD L. HINGS AWARD

Albert Banchs (October 2025)

Albert Banchs, director of IMDEA Networks, has been distinguished with the Donald L. Hings Award in recognition of his exceptional contributions to the optimization of networking and wireless communications. The award was presented during the International Con-

ference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM 2025), a leading event in the field of networking and mobile systems, held in Barcelona from October 27 to 31.

THREE MINUTE THESIS (3MT) COMPETITION

Serly Moghadas Gholian (May 2025)
Serly Moghadas Gholian received this award in recognition of her three-minute thesis presentation at ICMLCN25.

2025 BEST DOCTORAL THESIS AWARD

Aristide Tanyi Jong Akem (April 2025)
Aristide Tanyi-Jong Akem received this award for his thesis «User-Plane Algorithms for Stateless and Stateful Inference in Programmable Networks». Supervisor: Marco Fiore

ACM SENIOR MEMBER

Marco Fiore (February 2025)
IMDEA Networks' Research Professor has demonstrated performance through technical leadership. In addition, this distinction recognizes outstanding technical and professional contributions.

FELLOW OF THE ASIA-PACIFIC ARTIFICIAL INTELLIGENCE ASSOCIATION (AAIA) AND FELLOW OF THE INTERNATIONAL ARTIFICIAL INTELLIGENCE INDUSTRY ALLIANCE (AIIA)

Marco Ajmone Marsan (January 2025)
Marco Ajmone has been named a Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA) and the International Artificial Intelligence Industry Alliance (AIIA) in recognition of his outstanding achievements in computer communication networks.

5.1.3. R&D Awards

EXEMPLARY REVIEWER

Nadezhda Chukhno (December 2025)
Our Post-Doc Researcher, Nadezda Chukhno, was selected as an Exemplary Reviewer for IEEE Communications Letters (COMML) based on reviews in 2025 and for significant contributions made in furthering the objectives of the society.

1ER PREMIO EN EL DATATHON DATABRI-X 2025

Nadezhda Chukhno, Antonio Bazco Nogueras, Diego Madariaga, and Genoveva García (May 2025)
DataBri-X Datathon 2025, IMDEA Networks Institute, Madrid, España
Team Suazo, comprising Nadezhda Chukhno, Antonio Bazco Nogueras, Diego Madariaga, and Genoveva García, was awarded the first prize of €2,000 for their outstanding project utilizing JenPlane to solve complex data issues with creativity and precision.

5.2. Publications

IMDEA Networks presented its scientific work in various formats and venues during 2025. There were **116** publications, out of which **100** were peer reviewed. This is how they are structured:

1 Book chapter | 46 Journal Articles | 4 Magazine Articles | 40 Conference and Workshop Papers | 9 Conference and Workshop Posters & Demos | 3 Invited Papers, Keynotes, Invited Talks, Tutorials, Lectures, etc.

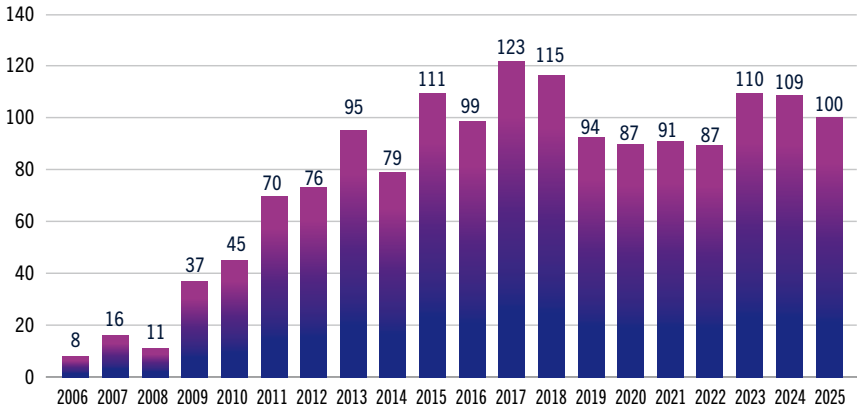
As well as the previous there were:
13 PhD Theses

According to **Google Scholar,** IMDEA Networks' researchers have received around **124.913 citations in total** along their research career, which corresponds to an **aggregated H-index of 151.**

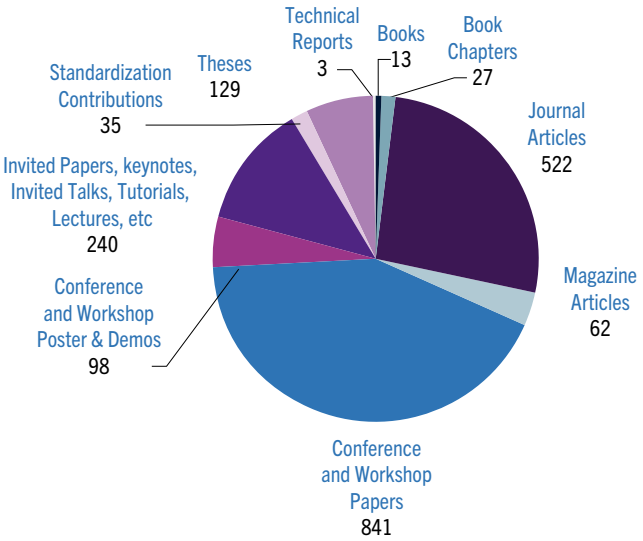
publications

2006-2025

number of publications (peer-reviewed)

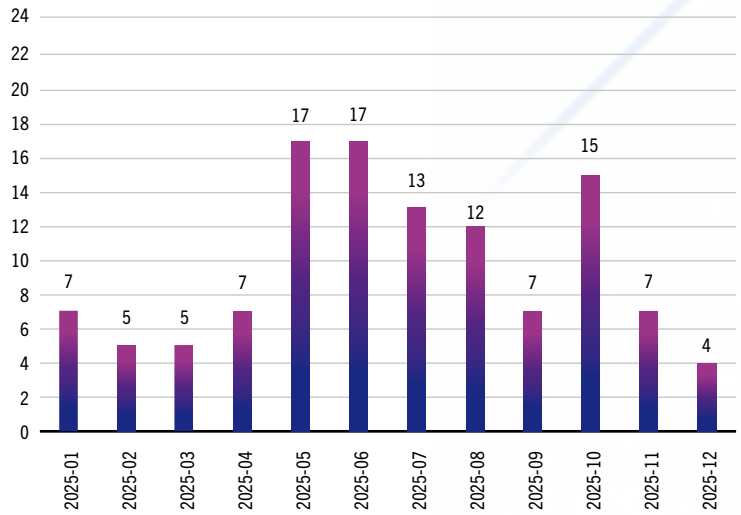


all publications by type



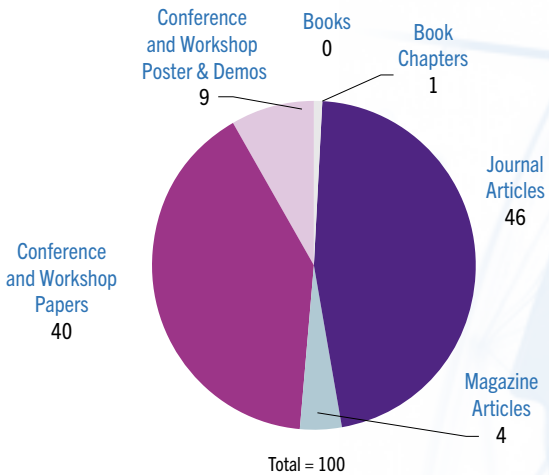
2025

total number of publications per month



Total = 116

publications by type (peer reviewed)



Total = 100

Publications 2025

Book chapters [1]

1. **Claudio Fiandrino, Pablo Fernández, Marco Fiore, Joerg Widmer (April 2025)**
XAI for Network Management
Elsevier. ISBN: 978-0-443-29135-7.

Journal Articles [46]

1. **Alejandro Sánchez, Rosa Elvira Lillo, Jose Aguilar (December 2025)**
Extension to a fuzzy cognitive maps-based approach for modelling granular time series for forecasting tasks
Knowledge-Based Systems. 10.1016/j.knosys.2025.114763. Volume 331, Elsevier. ISSN: 0950-7051.

2. **Tobias Meuser, Jannis Weil, Aninda Lahiri, Marius Paraschiv (December 2025)**
RELiQ: Scalable Entanglement Routing via Reinforcement Learning in Quantum Networks
IEEE Transactions on Communications. 10.1109/TCOMM.2025.3640083. Volume 74.

3. **Leonardo Peroni, Sergey Gorinsky (December 2025)**
An End-to-End Pipeline Perspective on Video Streaming in Best-Effort Networks: A Survey and Tutorial
ACM Computing Surveys. 10.1145/3742472. Volume 57, ACM.

4. **Cindy Pamela López, Marco Santórum, Jose Aguilar (November 2025)**
Architecture for Managing Autonomous Virtual Organizations in the Industry 4.0 Context
Computers. 10.3390/computers14120519. Volume 14, MDPI. ISSN: 2073-431X.

5. **Yi Fan, Donghui Shi, Jose Aguilar, Jozef Zurada (November 2025)**
USER: User-Side modality representation enhancement for multimodal recommendation
Knowledge-Based Systems. 10.1016/j.knosys.2025.114943. Volume 331, Elsevier. ISSN: 0950-7051.

6. **Leonardo Lo Schiavo, Genoveva Garcia, Marco Gramaglia, Marco Fiore, Albert Banchs, Xavier Costa-Perez (November 2025)**
The TES framework: Joint Statistical Modeling and Machine Learning for Network KPI Forecasting
IEEE Transactions on Network and Service Management. 10.1109/TNSM.2025.3628788. Volume 23, IEEE. ISSN: 1932-4537.

7. **Markus Fidler, Flavio Gallistl, Jaya Prakash Champati, Joerg Widmer (November 2025)**
2D-AoI: Age-of-Information of Distributed Sensors for Spatio-Temporal Processes
IEEE Transactions on Communications. 10.1109/TCOMM.2025.3628766. IEEE.

8. **Sergi Alcalá-Marín, Weili Wu, Aravindh Raman, Marcelo Bagnulo, Ozgu Alay, Fabián Bustamante, Marco Fiore, Andra Lutu (October 2025)**
A Comparative Analysis of Global Mobile Network Aggregators
IEEE Transactions on Network and Service Management. 10.1109/TNSM.2025.3582089. Volume 22, IEEE.

9. **Sergi Alcalá-Marín, Dario Bega, Marco Gramaglia, Albert Banchs, Xavier Costa-Perez, Marco Fiore (October 2025)**
AZTEC+: Long- and Short-Term Resource Provisioning for Zero-Touch Network Management
IEEE Transactions on Network and Service Management. 10.1109/TNSM.2025.3580706. Volume 22, IEEE.

10. **Jose Aguilar, Maria R. Moreno (September 2025)**
An Optimal Sensor Configuration Method using Genetic Algorithms for a Fault-Tolerant Energy Management for Smart Buildings
Computing. 10.1007/s00607-025-01537-5. Volume 107, Springer. ISSN: 0010-485X.

11. **Luis Enciso-Salas, Gustavo Perez-Zuniga, Javier Sotomayor-Moriano, Elodie Chanthery, Edgar Hernando Sepulveda-Oviedo, Audine Subias, Louise Trave- Massuyes, Rodrigo Garcia, Jose Aguilar (September 2025)**
Bibliometric Literature Review of Integrated Data and Model Based Diagnosis Approaches for the Industry 4.0
International Journal of Systems Science. 10.1080/00207721.2025.2550562. Taylor and Francis. ISSN: 0020-7721.

12. **José Miguel Moreno, Narseo Vallina-Rodríguez, Juan Tapiador (August 2025)**
Fakeium: A dynamic execution environment for JavaScript program analysis
SoftwareX. 10.1016/j.softx.2025.102301.. Volume 31, Elsevier. ISSN: 2352-7110.

13. **Javier Talavante, Borja Genovés Guzmán, Domenico Giustiniano (August 2025)**
Solar cell operating point for joint LiFi communication and harvesting in battery-free devices
IEEE Transactions on Communications. IEEE.

14. **Mauricio González-Palacio, Liliana González-Palacio, Jose Aguilar, Long Bao Le (August 2025)**
WSN-Based Wildlife Localization Framework in Dense Forests through Optimization Techniques
Ad Hoc Networks. 10.1016/j.adhoc.2025.103815. Volume 173, Elsevier. ISSN: 1570-8705.

15. **Ana Gutiérrez, Jose Aguilar, Ana Ortega, Edwin Montoya (August 2025)**
Definition of innovation problems in organizations using data analysis tasks from hybrid sources: social networks and organizational databases.
Journal of Innovation and Entrepreneurship. 10.1186/s13731-025-00536-2. Volume 14, Springer. ISSN: 2192-5372.

16. **Dmitri Moltchanov, Olga Chukhno, Nadezda Chukhno, Antonella Molinaro (August 2025)**
6G Communications in the Terahertz Band: The Impact of Near-Field Dynamics Under User Micro-mobility
IEEE Open Journal of the Communications Society. 10.1109/OJCOMS.2025.3595444. IEEE. ISSN: 2644-125X.

17. **William Hoyos, Rodrigo García, Jose Aguilar (August 2025)**
Multistage Training of Fuzzy Cognitive Maps to Predict Preeclampsia and Fetal Growth Restriction
IEEE Access. 10.1109/ACCESS.2025.3595758.. Volume 13, IEEE. ISSN: 2169-3536.

18. **Stefanos Bakirtzis, Yapar Çağkan, Marco Fiore, Jie Zhang, Ian Wassell (August 2025)**
Empowering Wireless Network Applications with Deep Learning-based Radio Propagation Models
IEEE Wireless Communications. 10.1109/MWC.012.2400336. Volume 32, IEEE. ISSN: 1558-0687.

19. **Kun Woo Cho, Marco Cominelli, Francesco Gringoli, Joerg Widmer, Kyle Jamieson (August 2025)**
Scalable Multi-Modal Learning for Cross-Link Channel Prediction in Massive IoT Networks
IEEE Transactions on Networking. 10.1109/TON.2025.3553023. Volume 33, IEEE. ISSN: 2998-4157.

20. **Noura Alomar, Joel Reardon, Aniketh Girish, Narseo Vallina-Rodríguez, Serge Egelman (July 2025)**
The Effect of Platform Policies on App Privacy Compliance: A Study of Child-Directed Apps
Proceedings on Privacy Enhancing Technologies 2025.

21. **Raul Toscano, Jose Aguilar, Manuel Caro, Anibal Trebilcok, Mauricio Toro (July 2025)**
A Fuzzy Classification System to Analyze the Yield of Cotton Production
International Journal of Information Technology & Decision Making. 10.1142/S0219622025500828. World Scientific. ISSN: 0219-6220.

22. **Rodrigo García, Jose Aguilar, William Hoyos (July 2025)**
A Prescriptive Approach based on Fuzzy Cognitive Maps and Genetic Algorithms for Disease Management in Beef Production
IEEE Access. 10.1109/ACCESS.2025.3583670. Volume 13, IEEE. ISSN: 2169-3536.

23. **Daniele Baccega, Jose Aguilar, Carlos Baquero, Antonio Fernández Anta, Juan Marcos Ramirez (July 2025)**
Social Compliance with NPIs, Mobility Patterns, and Reproduction Number: Lessons from COVID-19 in Europe
IEEE Access. 10.1109/ACCESS.2025.3586508. IEEE. ISSN: 2169-3536.

24. **Adarsh Prasad Behera, Paulius Daubaris, Iñaki Bravo, José Gallego, Roberto Morabito, Joerg Widmer, Jaya Prakash Champati (July 2025)**
Exploring the Boundaries of On-Device Inference: When Tiny Falls Short, Go Hierarchical
IEEE Internet of Things Journal. 10.1109/JIOT.2025.3583477. IEEE.

25. **Andrea Fresa, Nicola Ferrrarese, Yu Liu, Mina Ferizbegovic, Aitor Hernandez Herranz (June 2025)**
Profiling- and learning-based co-design of communication and compute in scalable robotics
IEEE Journal on Selected Areas in Communications. 10.1109/JSAC.2025.3574600. Volume Co-Design of Communication, Computing, and Control in Industrial Cyber-Physical Systems, IEEE. ISSN: 1558-0008.

26. **Ana Gutiérrez, Jose Aguilar, Ana Ortega, Edwin Montoya (June 2025)**
Sentiment analysis on social networks for defining innovation problems in organizations
Technology in Society. 10.1016/j.techsoc.2024.102804. Elsevier. ISSN: 1879-3274.

27. **Feilong Wang, Donghui Shi, Jose Aguilar, Xinyi Cui, Jinsong Jiang, Shen Longjian, Mengya Li (June 2025)**
LLM-KGMQA: large language model-augmented multi-hop question-answering system based on knowledge graph in medical field
Knowledge and Information Systems. 10.1007/s10115-025-02399-1. Springer. ISSN: 0219-3116.

28. **Gabriele Nunziati, Claudio Fiandrino, Luca Foschini, Paolo Bellavista (June 2025)**
Monitoring 5G Core Networks Vulnerabilities with eBPF
IEEE Networking Letters. IEEE.

29. **Aristide Tanyi Jong Akem, Beyza Bütün, Michele Gucciardo, Marco Fiore (May 2025)**
Practical and General-Purpose Flow-Level Inference with Random Forests in Programmable Switches
IEEE/ACM Transactions on Networking. 10.1109/TON.2025.3564465.

30. **Bo Wu, Donghui Shi, Jose Aguilar (May 2025)**
Brain Tumors Classification in MRIs Based on Personalized Federated Distillation Learning with Similarity- Preserving
International Journal of Imaging Systems and Technology. 10.1002/ima.70046. Volume 35, Wiley. ISSN: 0899-9457.

31. **Jairo Fuentes, Jose Aguilar, Edwin Montoya (May 2025)**
Autonomous cycle of data analysis tasks for the determination of the coffee productive process for MSMEs
Journal of Industrial Information Integration. 10.1016/j.jii.2025.100788. Volume 44, Elsevier. ISSN: 2467-964X.

32. **Alfonso Rodríguez Barredo De Valenzuela, Sergio Pastrana, Guillermo Suarez-Tangil (April 2025)**
Snorkeling in dark waters: A longitudinal surface exploration of unique Tor Hidden Services (Extended Version)
arXiv. Volume 20.

33. **Huang Rui, Qing-Yu Cai, Farzam Nosrati, Rosario Lo Franco, Zhong-Xiao Man (April 2025)**
Steady-state coherence in multipartite quantum systems: its connection with thermodynamic quantities and impact on quantum thermal machines
Quantum Science and Technology.

34. **Claudia Gómez Llanez, Paola Vallejo, Jose Aguilar (April 2025)**
Specification of users' cognitive functions and emotions to promote their training through Serious games
Entertainment Computing. 10.1016/j.entcom.2025.100921. Volume 53, Elsevier. ISSN: 1875-953X.

35. **Imran Khan, Moinak Ghoshal, Joana Angjo, Sigrid Dimce, Mushahid Hussain, Paniz Parastar, Yenchia Yu, Xueting Yeng, Sumit Hawal, Shirui Huang, Ameya Rane, Yin Wang, Claudio Fiandrino, Charalampos Orfanidis, Shivang Aggarwal, Ana C Aguiar, Ozgu Alay, Carla Fabiana Chiasserini, Falko Dressler, Y. Charlie Hu, Steven Y. Ko, Dimitrios Koutsonikolas, Joerg Widmer (April 2025)**
How mature is 5G deployment? A cross-sectional, year-long study of 5G uplink performance
Computer Communications. 10.1016/j.comcom.2025.108153. Elsevier.

36. **Jorge Bacca, Cristian Arcos, Juan Marcos Ramirez, Henry Arguello (March 2025)**
Middle-Output Deep Image Prior for Blind Hyperspectral and Multispectral Image Fusion
Signal Processing: Image Communication. 10.1016/j.image.2024.117247. Volume 132, Elsevier. ISSN: 0923-5965.

37. **Jose Aguilar, Gabriela Santiago (March 2025)**
Specification of a smart-analysis system of sound events for smart environments
Applied Computing and Informatics. 10.1108/ACI-06-2024-0240. Emerald. ISSN: 2634-1964.

38. **Pablo Fernández, Claudio Fiandrino, Eloy Perez Gomez, Hossein Mohammadalizadeh, Marco Fiore, Joerg Widmer (March 2025)**
AIChronoLens: AI/ML Explainability for Time Series Forecasting in Mobile Networks
IEEE Transactions on Mobile Computing. 10.1109/TMC.2025.3554035. IEEE.

39. **Penglin Wang, Donghui Shi, Jose Aguilar (February 2025)**
PCP-YOLO: an approach integrating non-deep feature enhancement module and polarized self-attention for small object detection of multiscale defects
Signal, Image and Video Processing. 10.1007/s11760-024-03666-4. Volume 19, Springer.

40. **Juan Carlos Arbeláez-Estrada, Jose Aguilar, Paola Vallejo, Daniel Correa, Santiago Ruiz-Arenas, Elizabeth Rendón-Vélez, David Ríos-Zapata, Joan Alvarado (February 2025)**
Multimodal packaging waste brand identification approach for extended producer responsibility traceability
Journal of Cleaner Production. 10.1016/j.jclepro.2024.144601. Volume 487, Elsevier.

41. **Alberto Pacheco, Jose Aguilar (February 2025)**
Systematic literature review on quantum applications in nanotechnology
The Journal of Supercomputing. 10.1007/s11227-024-06747-w. Volume 81, Springer.

42. **Serly Moghadas Gholian, Claudio Fiandrino, Narseo Vallina-Rodríguez, Marco Fiore, Joerg Widmer (January 2025)**
DeExp: Revealing Model Vulnerabilities for Spatio-Temporal Mobile Traffic Forecasting with Explainable AI
IEEE Transactions on Mobile Computing. IEEE.

43. **Aristide Tanyi Jong Akem, Guillaume Fraysse, Marco Fiore (January 2025)**
Real-Time Encrypted Traffic Classification in Programmable Networks with P4 and Machine Learning
International Journal of Network Management. 10.1002/nem.2320. Volume 35, Wiley.

44. **Blanca López, Iván Vidal, Francisco Valera, Diego R. López (January 2025)**
An Enhanced Virtualized Control and Key Management Model for QKD Networks
IEEE Network. 10.1109/MNET.2025.3538752.

45. **Phuc Dinh, Moinak Ghoshal, Yunmeng Han, Yufei Feng, Dimitrios Koutsonikolas, Joerg Widmer (January 2025)**
Demystifying Resource Allocation Policies in Operational 5G mmWave Networks
IEEE/ACM Transactions on Networking. IEEE/ACM.

46. **Ana Gutiérrez, Jose Aguilar, Ana Ortega, Edwin Montoya (January 2025)**
Sentiment Analysis on Social Networks for Defining Innovation Problems in Organizations
Technology in Society. 10.1016/j.techsoc.2024.102804. Volume 81, ISSN: 1879-3274.

Magazine Articles [4]

1. **Diego Madariaga, Lucas Torrealba-Aravena, Javier Bustos-Jiménez (August 2025)**
Opportunities for Inexpensive Network Measurements From Real Mobile Devices
IEEE Network. 10.1109/MNET.2025.3598093. IEEE.

2. **Jacopo Pegoraro, Pablo Saucedo, Jesus Omar Lacruz, Michele Rossi, Joerg Widmer (June 2025)**
DISC: A Dataset for Integrated Sensing and Communications in mmWave Systems
IEEE Communications Magazine. Volume COMMAG-24-00687.R1.

3. **Olga Chukhno, Nadezda Chukhno, Aleksandr Ometov, Sara Pizzi, Giuseppe Araniti, Antonella Molinaro (May 2025)**
Application-Driven Offloading of XR Mission Critical via Integrated TN/NTN
IEEE Network. 10.1109/MNET.2025.3572214. IEEE. ISSN: 1558-156X.

4. **Aristide Tanyi Jong Akem (January 2025)**
User-Plane Algorithms for Stateless and Stateful Inference in Programmable Networks
ACM SIGMETRICS Performance Evaluation Review. 10.1145/3712170.3712177. Volume 52, ACM.

Conference and Workshop Papers [40]

1. **Timothé Albouy, Antonio Fernández Anta, Chryssis Georgiou, Nicolas Nicolaou, Junlang Wang (December 2025)**
Tight Conditions for Binary-Output Tasks Under Crashes
International Conference on Principles of Distributed Systems. Iacsi, Romania.

2. **Davide Mancino, Hasret Ozan Sevim, Oriol Saguillo (November 2025)**
Bunny Hops and Blockchain Stops: Cross-Chain MEV Detection With N-Hops
Conference on Blockchain Research & Applications for Innovative Networks and Services. Zurich, Switzerland.

3. **Behafarid Hemmatpour, Javad Dogani, Nikolaos Laoutaris (November 2025)**
Reducing Street Parking Search Time via Smart Assignment Strategies
ACM International Conference on Advances in Geographic Information Systems. Minneapolis, MN, USA.

4. **Mariella Mischinger, Jack Hughes, Fedor Vitiugin, Sergio Pastrana, Alice Hutchings, Guillermo Suarez-Tangil (November 2025)**
Lost in Translation: Analyzing Non-English Cybercrime Forums
APWG eCrime 2025. San Diego, USA.

5. **Sharad Agarwal, Antonis Papasavva, Guillermo Suarez-Tangil, Marie Vasek (October 2025)**
Fishing for Smishing: Understanding SMS Phishing Infrastructure and Strategies by Mining Public User Reports
Internet Measurement Conference.

6. **Phuc Dinh, Eduardo Baena, Yufei Feng, Yunmeng Han, Weiming Qi, Zihan Xu, Moinak Ghoshal, Pau Closas, Dimitrios Koutsonikolas, Joerg Widmer (October 2025)**
mm-NOLOC: mmWave-based Localization for Mobile Networks without 3GPP Location Service
ACM Symposium on Mobile Ad Hoc Networking and Computing. Houston, Texas.

7. **Mohsen Ghasemi, Daniele Lorenzi, Mahdi Dolati, Farzad Tashtarian, Sergey Gorinsky, Christian Timmerer (October 2025)**
Receiving Kernel-Level Insights via eBPF: Can ABR Algorithms Adapt Smarter?
Würzburg Workshop on Next-Generation Communication Networks (WueWoWAS). Würzburg, Germany.

8. **Hagit Attiya, Antonio Fernández Anta, Alessia Milani, Alexandre Rapetti, Corentin Travers (October 2025)**
Auditable Shared Objects: From Registers to Synchronization Primitives
International Symposium on Distributed Computing (was WDAG). Berlin, Germany.

9. **Margarita Capretto, Martín Ceresa, Antonio Fernández Anta, Pedro Moreno-Sánchez, César Sánchez (October 2025)**
A Secure Sequencer and Data Availability Committee for Rollups
ACM Conference on Computer and Communications Security. Taipei, Taiwan.

10. **Maximo Pirri, Diego Madariaga, Zbigniew Smoreda, Marco Fiore (October 2025)**
The Anatomy of Olympic Games: a Mobile Traffic Demand Perspective
Internet Measurement Conference. Madison, Wisconsin, USA.

11. **Madhushanka Padmal, Dilushi Piumwardane, Domenico Giustiniano, Thiemo Voigt (October 2025)**
Localization and tracking of ambient RF sources with analog backscatter tags
ACM/IEEE International Conference on Modelling, Analysis and Simulation of Wireless and Mobile Systems. Barcelona.

12. **Sai Pavan Deram, Khaled Ardah, Joerg Widmer, Martin Haardt (October 2025)**
Efficient Estimation of Non-Circular (NC) Wavefronts via R-D Tensorized NC Tensor-ESPRIT-type Algorithms
Asilomar Conference on Signals, Systems and Computers. Asilomar Conference Grounds, Pacific Grove, California, USA.

13. **Oriol Saguillo, Lucianna Kiffer, Vahid Ghafouri, Guillermo Suarez-Tangil (October 2025)**
Unraveling the Probabilistic Forest: Arbitrage in Prediction Markets
Advances in Financial Technologies. Pittsburgh, PA, USA.

14. **Weihe Li, Beyza Bütün, Tianyue Chu, Marco Fiore, Paul Patras (September 2025)**
Pallas: A Data-Plane-Only Approach to Accurate Persistent Flow Detection on Programmable Switches in High-Speed Networks
IEEE International Conference on Network Protocols. Seoul, South Korea.

15. **Enrique Domínguez, Francisco José Mata, Freddy Albert Pinto, Marcelo Meneses, David García, Javier Fidalgo, Domenico Giustiniano, Giuseppe Santaromita, Timothy Otim, Francesco Pigato, José A. López-Salcedo, Gonzalo Seco-Granados, Fran Fabra, Antoni Reus, Marc Fernández (September 2025)**
Unified Navigation and Communication Hybrid Terminal
ION GNSS+, The International Technical Meeting of the Satellite Division of The Institute of Navigation.

16. **Simone Bizzarri, Maurizio Fodrini, Ginés García-Avilés, Francesco Spinelli, Marco Fiore, Marco Gramaglia (September 2025)**
Rethinking Network Architecture: Enabling Service-Based Design Beyond 5G
IEEE Conference on Standards for Communications and Networking. Bologna, Italy.

17. **Sergio Díaz-Aranda, Juan Marcos Ramirez, Mohit Daga, Jaya Prakash Champati, Jose Aguilar, Rosa Elvira Lillo, Antonio Fernández Anta (August 2025)**
Error Bounds for the Network Scale-Up Method
ACM International Conference on Knowledge Discovery and Data Mining. Toronto, Canada.

18. **Sharad Agarwal, Emma Harvey, Enrico Mariconti, Guillermo Suarez-Tangil, Marie Vasek (August 2025)**
'Hey mum, I dropped my phone down the toilet': Investigating Hi Mum and Dad SMS Scams in the United Kingdom
Usenix Security Symposium. Seattle, WA, USA.

19. **Lioba Heimbach, Yann Vonlanthen, Juan Villacis, Lucianna Kiffer, Roger Wattenhofer (August 2025)**
Deanonymizing Ethereum Validators: The P2P network has a privacy issue
Usenix Security Symposium. Seatlle, WA, USA.

20. **Aniketh Girish, Joel Reardon, Juan Tapiador, Srdjan Matic, Narseo Vallina-Rodríguez (July 2025)**
Your Signal, Their Data: An Empirical Privacy Analysis of Wireless-scanning SDKs in Android
Privacy Enhancing Technologies Symposium (was International Workshop of Privacy Enhancing Technologies). Washington, DC, USA.

21. **Nipuna Weerasekara, Jose Miguel Moreno, Srdjan Matic, Joel Reardon, Juan Tapiador, Narseo Vallina-Rodríguez (July 2025)**
Tracking Without Borders: Studying the Role of WebViews in Bridging Mobile and Web Tracking
Privacy Enhancing Technologies Symposium (was International Workshop of Privacy Enhancing Technologies). Washington, DC, USA.

22. **Rafael Ruiz, Jesus Omar Lacruz, Bastian Bloessl, Matthias Hollick, Joerg Widmer (July 2025)**
HELIX: High-speed Real-Time Experimentation Platform for 6G Wireless Networks
ACM SIGMOBILE International Conference on Mobile Systems, Applications and Services. Anaheim, USA.

23. **Vinuri Bandara, Stijn Pletinckx, Ilya Grishchenko, Christopher Kruegel, Giovanni Vigna, Juan Tapiador, Narseo Vallina-Rodríguez (June 2025)**
Beneath the surface: An analysis of OEM customizations on the Android TLS protocol stack
IEEE European Symposium on Security and Privacy. Venice, Italy.

24. **Yusuf Mücahit Çetinkaya, Vahid Ghafouri, Guillermo Suarez-Tangil, Jose Such, Elmas Tuğrulcan (June 2025)**
Cross-Partisan Interactions on Twitter
International Conference on Web and Social Media. Copenhaguen, Denmark.

25. **Rui Wang, Xingkai Wang, Huanhuan Chen, Jérémie Decouchant, Stjepan Picek, Nikolaos Laoutaris, Kaitai Liang (June 2025)**
MUDGUARD: Taming Malicious Majorities in Federated Learning using Privacy-Preserving Byzantine-Robust Clustering
Measurement and Modeling of Computer Systems. Stony Brook, New York, USA.

26. **Livia Elena Chatzieleftheriou, David De Andrés Hernández, Simone Bizzarri, Marco Fiore, Maurizio Fodrini, Andres Garcia-Saavedra, Marco Gramaglia, Esteban Municio, Dimitris Tsolkas (June 2025)**
6G Standardization Potential of the ORIGAMI Novel Architectures and Use Cases
EuCNC & 6G Summit 2025. Poznan, Poland.

27. **Stavros Eleftherakis, Domenico Giustiniano, Nicolas Kourtellis (June 2025)**
SoK: Evaluating 5G-Advanced Protocols Against Legacy and Emerging Privacy and Security Attacks
ACM Conference on Security and Privacy in Wireless and Mobile Networks. Arlington, Virginia, USA.

28. **Hagit Attiya, Antonio Fernández Anta, Alessia Milani, Alexandre Rapetti, Corentin Travers (June 2025)**
Auditing without Leaks Despite Curiosity
ACM Symposium on Principles of Distributed Computing. Huatulco, Mexico.

29. **Sai Pavan Deram, Marco Rossanese, Andres Garcia-Saavedra, Syed Waqas Haider Shah, Vincenzo Sciancalepore, Joerg Widmer, Xavier Costa-Perez (June 2025)**
RISENSE: Long-Range In-Band Wireless Control of Passive Reconfigurable Intelligent Surfaces
ACM SIGMOBILE International Conference on Mobile Systems, Applications and Services. Anaheim, California, USA.

30. **Diletta Olliaro, Michela Meo, Matteo Sereno, Andrea Marin, Marco Ajmone Marsan (June 2025)**
Energy/Performance Trade-Off in RANs with Dynamic Management of Frequency Bands
International Teletraffic Congress. Trondheim, Norway.

31. **Nikolaos Apostolakis, Marta Sierra-Obea, Marco Gramaglia, Jose A. Ayala-Romero, Andres Garcia-Saavedra, Marco Fiore, Albert Banchs, Xavier Costa-Perez (June 2025)**
Quantum Computing in the RAN with Qu4Fec: Closing Gaps Towards Quantum-based FEC Processors
Measurement and Modeling of Computer Systems. Stony Brook, NY, USA.

32. **Juan Marcos Ramirez, Pablo Rojo, Vincenzo Mancuso, Antonio Fernández Anta (May 2025)**
Interpretable Outlier and Anomaly Detection for Mobile Networks from Small Tabular Data
IFIP International Conference on Networking. Limassol, Cyprus.

33. **Sachit Mishra, Diego Madariaga, Cezary Ziemlicki, Diala Naboulsi, Marco Fiore (May 2025)**
An Urban Geography of Mobile Application Usage: Connecting Demand Dynamics and Urban Fabrics
IEEE International Conference on Computer Communications. London, United Kingdom.

34. **Farzad Tashtarian, Mahdi Dolati, Daniele Lorenzi, Mojtaba Mozhganfar, Sergey Gorinsky, Ahmad Khonsari, Christian Timmerer, Hermann Hellwagner (May 2025)**
ALPHAS: Adaptive Bitrate Ladder Optimization for Multi-Live Video Streaming
IEEE International Conference on Computer Communications. London, United Kingdom.

35. **Osman Tugay Basaran, Davide Villa, Pedram Johari, Michele Polese, Claudio Fiandrino, Falko Dressler, Tommaso Melodia (May 2025)**
Gen-TWIN: Generative-AI-Enabled Digital Twin for Open Radio Access Networks
IEEE International Conference on Computer Communications. London, United Kingdom.

36. **Serly Moghadas Gholian, Claudio Fiandrino, Joerg Widmer (May 2025)**
A Scalable DNN Training Framework for Traffic Forecasting in Mobile Networks
IEEE International Conference on Machine Learning for Communication and Networking. Barcelona, Spain.

37. **Pablo Fernández, Iñaki Bravo, Anirudh Kamath, Claudio Fiandrino, Joerg Widmer (May 2025)**
CHRONOPROF: Profiling Time Series Forecasters and Classifiers in Mobile Networks with Explainable AI
IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks.

38. **Abhishek Duttagupta, Mohammaderfan Jabbari, Claudio Fiandrino, Marco Fiore, Joerg Widmer (May 2025)**
SYMBXRL: Symbolic Explainable Deep Reinforcement Learning for Mobile Networks
IEEE International Conference on Computer Communications. London, United Kingdom.

39. **Beyza Bütün, David De Andrés Hernández, Michele Gucciardo, Marco Fiore (May 2025)**
DUNE: Distributed Inference in the User Plane
IEEE International Conference on Computer Communications. London, United Kingdom.

40. **Weihe Li, Zukai Li, Beyza Bütün, Alec F. Diallo, Marco Fiore, Paul Patras (April 2025)**
Pontus: A Memory-Efficient and High-Accuracy Approach for Persistence-Based Item Lookup in High-Velocity Data Streams
International World Wide Web Conference. Sydney, Australia.

Conference and Workshop Posters & Demos [10]

1. **Orlando E. Martínez-Durive, Stefanos Bakirtzis, Cezary Ziemlicki, Marco Fiore (October 2025)**
Modeling Base Station Metadata Geolocation (Poster)
Netmob 25. Paris, France.

2. **Antonio Boiano, Maximo Pirri, Diego Madariaga, Nadezda Chukhno, Cezary Ziemlicki, Zbigniew Smoreda, Alessandro E. C. Redondi, Marco Fiore (October 2025)**
Poster: Is 5G a Hit? A Look into 5G Adoption in France (Poster)
Internet Measurement Conference. Madison, Wisconsin, USA.

3. **Nicolás Borrajo, Juan Marcos Ramirez, Farzam Nosrati, Jose Aguilar, Vincenzo Mancuso, Antonio Fernández Anta (July 2025)**
New QUBO Transformations to Improve Quantum and Simulated Annealing Performance for Quadratic Knapsack (Poster)
Genetic and Evolutionary Computations. Malaga, Spain.

4. **Jingkang Yang, Shuai Liu, Hongming Guo, Yuhao Dong, Xiamengwei Zhang, Sicheng Zhang, Pengyun Wang, Zitang Zhou, Binzhu Xie, Ziyue Wang, Bei Ouyang, Zhengyu Lin, Marco Cominelli, Zhongang Cai, Bo Li, Yuanhan Zhang, Peiyuan Zhang, Fangzhou Hong, Joerg Widmer, Francesco Gringoli, Lei Yang, Ziwei Liu (June 2025)**
EgoLife: Towards Egocentric Life Assistant (Poster)
IEEE/CVF Conference on Computer Vision and Pattern Recognition. Music City Center in Nashville, Tennessee, USA.

5. **Sai Pavan Deram, Marco Rossanese, Andres Garcia-Saavedra, Syed Waqas Haider Shah, Vincenzo Sciancalepore, Joerg Widmer, Xavier Costa-Perez (June 2025)**
RISENSE: Long-Range In-Band Wireless Control of Passive Reconfigurable Intelligent Surfaces (Poster)
ACM SIGMOBILE International Conference on Mobile Systems, Applications and Services. Anaheim, California, USA.

6. **Orlando E. Martínez-Durive, Stefanos Sotirios Bakirtzis, Cezary Ziemlicki, Marco Fiore (May 2025)**
Demonstrating Deep Learning-based Spatial Diffusion (Demo)
IEEE Conference on Computer Communications Workshops. London, United Kingdom.

7. **Abhishek Duttagupta, Mohammaderfan Jabbari, Claudio Fiandrino, Marco Fiore, Joerg Widmer (May 2025)**
Interactive Explanation and Steering of DRL Agents for Massive MIMO Scheduling with SYMBXRL (Demo)
IEEE International Conference on Computer Communications. London, United Kingdom.

8. **Beyza Bütün, David De Andrés Hernández, Jose Aguilar, Michele Gucciardo, Marco Fiore (May 2025)**
Demonstrating Distributed Inference in the User Plane with DUNE (Demo)
IEEE International Conference on Computer Communications. London, United Kingdom.

9. **Pablo Fernández, Claudio Fiandrino, Joerg Widmer (May 2025)**
Ph.D. Forum: Explainable AI for Time Series Analysis in 5G/6G Operations (Other)
IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks. Fort Worth, Texas, USA.

10. **Pablo Fernández, Iñaki Bravo, Anirudh Kamath, Claudio Fiandrino, Joerg Widmer (May 2025)**
Demo: Explaining Time Series Interactively with CHRONOPROF (Demo)
IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks. Fort Worth, Texas, USA.

Invited Papers, Keynotes, Invited Talks, Tutorials, Lectures, etc. [3]

1. **Arivarasan Karmegam, Gabina Luz Bianchi, Margarita Capretto, Martín Ceresa, Antonio Fernández Anta, César Sánchez (October 2025)**
Invited Paper: Setchain Algorithms for Blockchain Scalability (Invited Paper)
Symposium on Stabilization, Safety, and Security of Distributed Systems. Kathmandu, Nepal.

2. **Antonio Bazco-Nogueras (July 2025)**
RIPE Atlas: Can we found where the cloud is? (Invited Talk)
Summer School on Advanced Topics in 5G/6G Communications. Cuenca, Spain.

3. **Antonio Bazco-Nogueras (July 2025)**
Understanding the cloud through data analysis with ripe atlas (Invited Talk)
Summer School on Advanced Topics in 5G/6G Communications. Cuenca, Spain.

PhD Theses [13]

1. **Devriş İŞLER (December 2025)**
"Data Ownership in the Human-Centric Data Economy Era"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Nikolaos Laoutaris, IMDEA Networks Institute, Madrid, Spain

2. **Nikolaos APOSTOLAKIS (September 2025)**
"Sustainable Operation of 5G Virtualized RAN Computing Infrastructure"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Albert Banchs & Marco Gramaglia, IMDEA Networks Institute, Madrid, Spain

3. **Amir MEHRJOO (September 2025)**
"Analysis of quality and transparency in the online advertising ecosystem"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisors: Rubén Cuevas, UC3M, Madrid, Spain

4. **Aniketh GIRISH (September 2025)**
"Understanding Interconnected Abuse in Consumer Smart Device Ecosystems"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Narseo Vallina, IMDEA Networks Institute, Madrid, Spain

5. **Stavros ELEFTHERAKIS (September 2025)**
"Positioning Systems and the Challenges of Security & Privacy for Real-World Wireless Networks Deployments"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Domenico Giustiniano, IMDEA Networks Institute, Madrid, Spain

6. **Orlando E. MARTÍNEZ-DURIVE (July 2025)**
"Understanding Societal Phenomena and Network Operations with Mobile Metadata"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Marco Fiore, IMDEA Networks Institute, Madrid, Spain

7. **Tianyue CHU (July 2025)**
"Security-Enhanced and Privacy-Preserving Federated Learning"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Nikolaos Laoutaris, IMDEA Networks Institute, Madrid, Spain

8. **Sachit MISHRA (April 2025)**
"Data-Driven Exploration of Sociological Patterns in Mobile Network Traffic Demands"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Marco Fiore, IMDEA Networks Institute, Madrid, Spain

9. **Vahid GHAFOURI (March 2025)**
"NLP-Driven Approaches to Measuring Online Polarization and Radicalization"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Guillermo Suárez-Tangil, IMDEA Networks Institute, Madrid, Spain

10. **Yago LIZARRIBAR (March 2025)**
"From Low-Cost Spectrum Monitoring to 5G Networks: Algorithms and Systems for Localizing and Identifying Wireless Transmissions"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Domenico Giustiniano, IMDEA Networks Institute, Madrid, Spain

11. **Sergi ALCALÁ (February 2025)**
"Efficient 5G Mobile Network Management: Network Slicing and Global Roaming Optimization"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Marco Fiore, IMDEA Networks Institute, Madrid, Spain

12. **Leonardo PERONI (January 2025)**
"User Empowerment in Adaptive Video Streaming over Best-Effort Networks"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Sergey Gorinsky, IMDEA Networks Institute, Madrid, Spain

13. **Leonardo LO SCHIAVO (January 2025)**
"Sharing Heterogeneous Computing Resources in Virtualized Open Radio Access Networks"
PhD Thesis: Department of Telematics Engineering – Universidad Carlos III de Madrid, Spain
Supervisor: Marco Fiore & Andrés García Saavedra, IMDEA Networks Institute, Madrid, Spain

5.3. Scientific service

IMDEA Networks conducts its scientific activities with the final objective of ensuring the widest possible dissemination of the results of the work carried out by the Institute, both within the scientific community and towards the general public. Our scientific service includes participation by our researchers at different levels of involvement in leading conferences and journals in the field, R&D committees, standardization bodies, awards, publications, projects or sponsorships.

José AGUILAR

Journal editorial boards

- Member of the editorial board of the Computer Journal, Oxford and CLEI journal

TPC memberships

- 51st Latin American Informatics Conference (CLEI 25), 27-31 October 2025, Valparaíso, Chile
- International Conference on eDemocracy & eGovernment (ICEDEG), 11-13 June 2025, Bern, Switzerland

- Annual AAAI Conference on Artificial Intelligence (AAAI-25), 25 February – 4 March 2025, Philadelphia, Pennsylvania, USA

Journal editorial boards

- Advisory Board member: Performance Evaluation Journal (Elsevier)
- Editorial Board member: Computer Networks
- Senior Associate Editor: ACM Transactions on Modeling and Performance Evaluation of Computing Systems (ACM ToMPECS)

Organization committees

- Mediterranean Communication and Computer Networking Conference, 25-27 June 2025, Cagliari, Sardinia, Italy

Marco AJMONE MARSAN

Journal editorial boards

- Advisory Board member: Performance Evaluation Journal (Elsevier)
- Editorial Board member: Computer Networks
- Senior Associate Editor: ACM Transactions on Modeling and Performance Evaluation of Computing Systems (ACM ToMPECS)

Organization committees

- Mediterranean Communication and Computer Networking Conference (MedComNet 2025), 25-27 June 2025, Cagliari, Sardinia, Italy

Albert BANCHS

Professional posts and activities

- Member of the Spanish Committee on Research Ethics

TPC memberships

- IEEE International Conference on Computer Communications (IEEE INFOCOM 2025), 19-22 May 2025, London, UK
- IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM 2025), 27-30 May 2025, Fort Worth, TX, U.S.A.

Antonio BAZCO-NOGUERAS

Professional posts & activities

- Lecturer, Dept. of Telematics Engineering, UC3M.
- Seminar “RIPE Atlas: Can we find where the Cloud is?”, at the Summer School on Advanced Topics in 5G/6G Communication, 1-5 July 2025, Cuenca, Spain
- Seminar “Understanding the Cloud through Data Analysis with RIPE Atlas”, at the Summer School on Advanced Topics in 5G/6G Communication, 1-5 July 2025, Cuenca, Spain

- Invited Talk “Desafíos fundamentales en sistemas de red con inteligencia integrada”, Dept. of Mathematics, University of the Basque Country (UPV/EHU), November 2025, Bilbao, Spain
- Outreach article, “Forecasting Cloud Performance with RIPE Atlas”, 22 May 2025, link: https://labs.ripe.net/author/rita-ingabire/forecasting-cloud-performance-with-ripe-atlas/

TPC memberships

- IEEE International Conference on Computer Communications (INFOCOM 2026), 18-21 May 2026, Tokyo, Japan
- IEEE Virtual Conference on Communications (VCC), 4-6 November 2025, Virtual Conference
- IEEE International Symposium on Cluster, Cloud, and Internet Computing (CCGrid), 19-22 May 2025, Tromsø, Norway

Andrea BEDIN

Organization committees

- Workshop and Tutorial Co-chair EWSN 2026, 16-18 September 2026, Dresden, Germany

Marco CANIL

TPC memberships

- 26th International Conference on Distributed Computing and Networking (ICDCN 2025), 4-7 January 2025, Hyderabad, India

Nadezda CHUKHNO

Journal editorial boards

- Reviewer of journals: IEEE Communications Letters, IEEE Transactions on Vehicular Technology, IEEE Transactions on Mobile Computing, IEEE Transactions on Broadcasting, IEEE Network Magazine, IEEE Transactions on Communications, IEEE Open Journal of the Communications Society
- Co-editor of a Special Issue for From Cloud to Edge: Digital Twin Orchestration and Development in the 6G Era at Elsevier Computer Communications

Organization comittees

- Tutorial at European Wireless 2025 (EW2025): Road to XR Mass Adoption: How Time-Resilient AI and Distributed Computing Make It Possible? Sophia-Antipolis, France, October 27-29.

TPC memberships

- WiMob Short Papers, Posters and Demos (WiMob-SPPDT’2025), 20-22 October 2025, Marrakech, Morocco
- 30th IEEE Symposium on Computers and Communications (IEEE ISCC 2025), 2-5 July 2025, Bologna, Italy

Javad DOGANI

Journal editorial boards

- Guest Editor for the special issue of "Hardware Accelerators for Deep Learning and Privacy-Preserving Machine Learning" for Electronics Journal (ISSN 2079-9292), MDPI.
- Guest Editor for the special issue of "Cloud Computing and Edge Computing in IoT" for Electronics Journal(ISSN 2079-9292), MDPI.

Antonio FERNÁNDEZ ANTA

Professional posts and activities

- Grant reviewer for AEI and PRI Extremadura

Journal editorial boards

- Deputy Editor of The Computer Journal, Oxford University Press

TPC memberships

- The Annual Conference on Neural Information Processing Systems (NeurIPS 2025), 2-7 December 2025, San Diego, CA, USA
- International Conference on Principles of Distributed Systems (OPODIS 2025), 3-5 December 2025, Iaşi, Romania
- International Symposium on Distributed Computing (DISC 2025), 27-31 October 2025, Berlin, Germany
- KDD 2025, 3-7 August 2025, Toronto, Canada
- International Conference on Machine Learning (ICML 2025), 13-19 July 2025, Vancouver, Canada
- Advanced tools, programming languages, and PLatforms for Implementing and Evaluating algorithms for Distributed systems Workshop (ApPLIED 2025; held with PODC 2025), 16 June 2025, Huatulco, Mexico
- International Conference on Distributed and event -based systems (DEBS 2025), 10-13 June 2025, Gothenburg, Sweden

Claudio FIANDRINO

Professional posts and activities

- Voting Member for IEEE ComSoc Member and Global Activities Council for the EMEA region
- PhD defense committee of Leonardo Lo Schiavo (U3CM)
- Invited Talk "5G en el mundo real: Lo que revelan las mediciones a gran escala," 5G Latin America Summit, October 2025

Journal editorial boards

- IEEE Transactions on Mobile Computing
- IEEE Networking Letters
- Elsevier Computer Networks
- Elsevier Computer Communications

Organization committees

- Steering Committee: DTwin Workshop at International Conference on Computer Communications (IEEE INFOCOM 2025), 19-22 May 2025, London, United Kingdom
- Workshop Co-Chair: 6GBRAIN 2025 at IEEE PIMRC, 1 September 2025, Istanbul, Türkiye

TPC memberships

- IEEE International Conference on Computer Communications (IEEE INFOCOM 2026), 18-21 May 2026, Tokyo, Japan
- IEEE Global Communications Conference (GLOBECOM), 8–12 December 2025, Taipei, Taiwan, China
- ACM International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT 2025), 1-4 December 2025, Hkust, Hong Kong, China
- The 19th ACM Workshop on Wireless Network Testbeds, Experimental evaluation & Characterization 2025 (ACM WiNTECH 2025), 8 November 2025, Hong Kong, China
- IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), 27-30 May 2025, Forth Worth, Texas, USA
- IEEE CCNC - T3: Testbeds, Experimentation and Datasets for Communications and Networking track, January 2025, Las Vegas, NV, USA
- IEEE International Conference on Communications (ICC), 8–12 June 2025, Montreal, Canada

Marco FIORE

Professional posts & activities

- Co-founder and CTO at Net AI Tech Ltd
- HDR defense committees:
  - Dr. Sahar Hoteit (evaluator), Université Paris Saclay, 2025
- PhD defense committees:
  - Chao Wang (reviewer), Institut EURECOM / Sorbonne Université, 2025
  - Chieh-Chun Chen (reviewer), Institut EURECOM / Sorbonne Université, 2025
- Talks:
  - Invited seminar on “Programming the user plane for ML inference”, 15th Annual IMDEA Networks Institute Workshop, Madrid, Spain, May 2025
  - Invited lecture on “AI meets network requirements”, First European Mobile Systems Winter School, Como, Italy, Feb 2025
  - Invited lecture on “AI meets network requirements”, IEEE SPS 1st Winter School on AI for 6G Communications, Las Palmas de Gran Canaria, Spain, Feb 2025

Journal editorial boards

- Area Editor, Elsevier Computer Networks
- Editor, IEEE Transactions on Wireless Communications

Organization committees

- Steering Committee member: ACM Wireless of the Students, by the Students, and for the Students (S3) Workshop

TPC memberships

- Annual International Conference on Mobile Computing and Networking (ACM MobiCom), 26-30 October 2026, Austin, Texas, USA
- ACM Internet Measurement Conference (IMC) 2026, 12-16 October 2026, Karlsruhe, Germany
- IEEE International Conference on Computer Communications (INFOCOM 2026), 8-21 May 2026, Tokyo, Japan
- Annual AAAI Conference on Artificial Intelligence (AAAI 2026), 20-27 January 2026, Singapore

Domenico GIUSTINIANO

Professional posts & activities

- Visiting Professor at Uppsala University, May-August 2025.

TPC memberships

- Annual International Conference on Mobile Computing and Networking (ACM MobiCom), 26-30 October 2026, Austin, Texas, USA
- ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec 2026), 30 June – 3 July 2026, Saarbrücken, Germany
- IEEE International Conference on Computer Communications (INFOCOM 2026), 8-21 May 2026, Tokyo, Japan
- ACM/IEEE International Conference on Embedded Artificial Intelligence and Sensing Systems (Sensys 2026), 11-14 May 2026, Saint-Malo, France

Sergey GORINSKY

Journal editorial boards

- Editorial Board Member: ACM SIGCOMM Computer Communication Review

Organization committees

- Steering Committee Member: COMSNETS Association
- Workshop Chair: COMSNETS 2026
- Best Paper Award Committee Member: ICNP 2025
- Student Research Competition Judge: SIGCOMM 2025

TPC memberships

- ACM Web Conference (WWW 2026), 29 June - 3 July 2026, Dubai, United Arab Emirates
- IEEE International Conference on Computer Communications (INFOCOM 2026), 8-21 May 2026, Tokyo, Japan
- USENIX Symposium on Networked Systems Design and Implementation (NSDI 2026), 4-6 May 2026, Renton, WA, USA
- ACM International Conference on Multimedia (MM 2025), 27-31 October 2025, Dublin, Ireland

- Area chair: IEEE International Conference on Network Protocols (ICNP 2025), 22-25 September 2025, Seoul, South Korea
- ACM Workshop on Emerging Multimedia Systems (EMS 2025), 8 September 2025, Coimbra, Portugal

Lucianna KIFFER

Organization Comittees

- Steering Committee member: Advances in Financial Technologies (AFT), 6-9 October 2026, London, UK
- Steering Committee member: Advances in Financial Technologies (AFT), 7-10 October 2025, Pittsburgh, PA, USA

TPC memberships

- ACM SIGMETRICS, 8-12 June 2026, Ann Arbor, Michigan, USA
- IEEE Symposium on Security and Privacy (S&P), 18-21 May 2026, San Francisco, CA, USA
- IEEE Symposium on Security and Privacy (S&P), 12-15 May 2025, San Francisco, CA, USA
- Financial Cryptography and Data Security (FC), 14-18 April 2025, Miyakojima, Japan
- Financial Cryptography and Data Security (FC), 2-6 March 2026, St.Kitts and Nevis
- Advances in Financial Technologies (AFT), 7-10 October 2025, Pittsburgh, PA, USA

Diego MADARIAGA

TPC memberships

- 9th edition of the Network Traffic Measurement and Analysis (TMA 2025), 10-13 June 2025, Copenhagen, Denmark

Vincenzo MANCUSO

Journal editorial boards

- Guest Editor for the Special Issue Special issue on NETGCOOP 2025 for Performance Evaluation

Organization comittees

- General chair of MAIN 2026, Palermo
- General chair of NetGCoop 2026, Palermo
- Program chair of SayGreen (IEEE PERCOM workshop), Pisa

TPC memberships

- IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (IEEE WoWMoM 2026), 16-19 June, Bologna, Italy

- ACM SIGMETRICS 2026, 8-12 June 2026, Ann Arbor, Michigan, USA
- IFIP Networking 2026, 24-27 May, Lugano, Switzerland
- IEEE International Conference on Computer Communications (INFOCOM 2026), 18-21 May 2026, Tokyo, Japan
- IEEE Wireless Communications and Networking Conference 2026 (WCNC 2026), 13-16 April 2026, Malaysia
- Wireless On-demand Network systems and Services Conference (WONS 2026), 2-4 March 2026, Les Roches, Crans-Montana, Valais/Wallis, Switzerland
- JITEL 2025 - XVIII Jornadas de Ingeniería Telemática, 12-14 November 2025, Cáceres, Spain
- International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM 2025), 27-31 October, Barcelona, Spain
- European Wireless (EW 2025), 27-29 October 2025, Sophia-Antipolis, France
- Mediterranean Communication and Computer Networking Conference (MedComNet 2025), 25-27 June 2025, Cagliari, Sardinia, Italy
- IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM 2025), 27-30 May 2025, Fort Worth, Texas, USA
- IEEE International Conference on Computer Communications (IEEE INFOCOM 2025), 19-22 May 2025, London, United Kingdom
- IEEE international Symposium on Cluster, Cloud and Internet Computing (CCGrid 2025), 19-22 May 2025, Tromsø, Norway
- IEEE Wireless Communications and Networking Conference (IEEE WCNC 2025), 24-27 March 2025, Milan, Italy
- Wireless On-demand Network systems and Services Conference (WONS 2025), 27-29 January 2025, Hintertux, Zillertal, Tyrol, Austria

Luca SANTORO

Journal editorial boards

- IEEE Transaction on Instrumentation and Measurements TIM

TPC memberships

- IEEE COMPSAC, 8-11 July 2025, North Toronto, Ontario, Canada
- IEEE International Conference on Indoor Positioning and Indoor Navigation (IPIN), 15-18 September 2025, Tampere, Finland

Giuseppe SANTAROMITA

TPC memberships

- IEEE International Smart Cities Conference, 6-9 October 2025, Patras, Greece
- International Symposium on Algorithmic Aspects of Cloud Computing, 15-16 September 2025

Guillermo SUÁREZ-TANGIL

TPC memberships

- Usenix Security Symposium 2025, 13-15 August 2025, Seattle, WA, USA

Narseo VALLINA-RODRÍGUEZ

Professional posts & activities

- Jury Member. 9th CNIL-INRIA Privacy Research Award
- EDPB Pool of Experts' Member
- Project Reviewer Swiss National Science Foundation (SNSF)
- Project Reviewer for the Dutch Research Council

TPC memberships

- The ACM Web Conference, 29 June- 3 July 2026, Dubai, United Arab Emirates
- Usenix Security Symposium 2025, 13-15 August 2025, Seattle, WA, USA
- IEEE European Symposium on Security and Privacy (IEEE Euro S&P), 30 June – 4 July 2025, Venice, Italy

Joerg WIDMER

Professional posts & activities

- Fellow of the International Artificial Intelligence Industry Alliance (AIIA)

Journal editorial boards

- Editor: Computer Networks Journal (Elsevier)
- Guest Editor of IEEE Journal on Selected Areas in Communications Special Issue on "The Future of Wi-Fi and Wireless Technologies in Unlicensed Spectra"
- Editor of NPJ Wireless Technology– Special Collection on Wireless Sensing and Perception
- Associate Editor of IEEE Transactions on Mobile Computing

TPC memberships

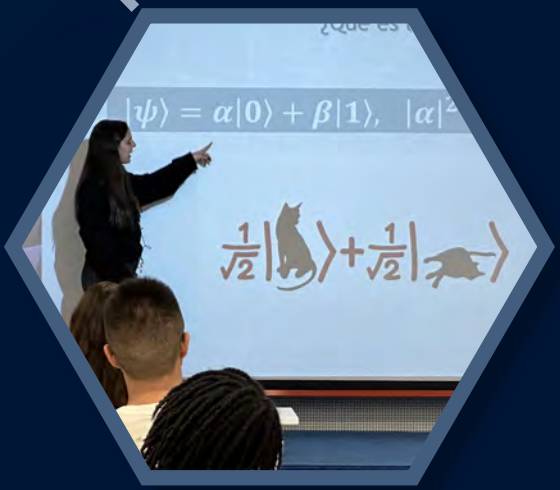
- ACM International Conference on Mobile Computing and Networking (Mobicom), 4-8 November 2025, Hong Kong, China
- ACM International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (MobiHoc), 27-30 October 2025, Houston, USA
- 5th Workshop on Synergies of Communication, Localization, and Sensing towards 6G (IEEE Globecom Workshop), 8-12 June 2025, Montreal, Canada
- IEEE Conference on Computer Communications (Infocom) (area chair), 19-22 May 2025, London, United Kingdom
- Wireless On-Demand Network Systems and Services (WONS), 27-29 January 2025, Hintertux, Zillertal, Tyrol, Austria

dissemination events

dissemination events


europea
madrid
noche


TELECO


$|\psi\rangle = \alpha|0\rangle + \beta|1\rangle,$
$\frac{1}{\sqrt{2}}|\rangle + \frac{1}{\sqrt{2}}|\rangle$

5.4. Outreach

5.4.1 Major events

Science and Innovation Week of Madrid 2025

5 November 2025

NEWS

Once again, IMDEA Networks opened its doors to students on the occasion of Science and Innovation Week, organized by the madri+d Knowledge Foundation. In this edition, 50 students from 10th grade (4th year of secondary education) and 11th grade (1st year of sixth form) from Colegio Santa María de los Apóstoles (Madrid) and IES Pedro Duque (Leganés) learned about secure quantum computing led by Ángela Díaz, a PhD student at the institute.

The session began with an introductory talk in which Ángela explained key concepts such as classical bits, qubits, and quantum superposition, illustrated with the Schrödinger's cat thought experiment. The students learned about the advantages and challenges of quantum computing and how the BB84 protocol enables the secure exchange of cryptographic keys. After the theoretical part, they took part in a hands-on activity in which they played the roles of Alice, Bob, and the messenger, using cardboards, markers, and invisible ink to explore how secure keys are generated and shared through different transmission channels.

More info

NEWS

10 years of 5TONIC

21 October 2025

The 5TONIC laboratory, founded in 2015 by Telefónica and IMDEA Networks as the first open innovation space for 5G, celebrated its 10th anniversary on 21 October at the Espacio Fundación Telefónica. The event brought together authorities, laboratory members, and representatives from industry, research, and academia to reflect on a decade of innovation and look ahead to the future of networks.

Within this framework, the laboratory announced the launch of a new chapter under the name NEXTONIC, with the slogan “Where Networks Evolve.”

More info

IMDEA Institutes. Science that helps the planet (II) at the European Researchers' Night in Madrid 2025

26 September 2025

NEWS

On 26 September, our director Albert Banchs took part in the 16th edition of the European Researchers' Night, held at the Residencia de Estudiantes in Madrid, together with his colleagues from the IMDEA Institutes. This annual event, coordinated by the madri+d Knowledge Foundation, is part of the activities of the European Horizon Europe programme.

In his presentation, Albert emphasized that "the greatest challenge for humanity is sustainability." He explained how IMDEA Networks works to make communication networks increasingly efficient while reducing their energy consumption. He also showcased a device developed by the Pervasive Wireless Systems group, which transmits and receives data without a battery using RF backscatter technology and LiFi, with applications in greenhouses and sustainable agriculture. Additionally, he presented a recent study that aims to improve transport sustainability.

More info

Researchers at Schools

19 June 2025

IMDEA Networks welcomed a group of 54 secondary school students from Colegio Amanecer (Alcorcón, Madrid), who had the opportunity to gain first-hand insight into how the Internet and future networks are researched.

During the visit, the students toured three of our cutting-edge laboratories: LiFi, millimeter wave, and 5TONIC, an open innovation environment where advanced technologies for 5G and future 6G networks are designed and tested.

More info

15th IMDEA Networks Annual International Workshop

28 May 2025

The 15th Annual IMDEA Networks International Workshop focused on the latest advances in 5G, emerging developments in 6G, and experimental research shaping the future of mobile and wireless communications. The workshop brought together international experts, researchers, and former members of the IMDEA Networks Alumni network to present ongoing work, discuss challenges, and explore future directions in next-generation networking technologies.

In addition to talks by members of the Scientific Council, invited speakers, and faculty, the workshop included a poster session showcasing innovative projects led by IMDEA Networks students.

This edition of the workshop was dedicated to Professor Arturo Azcorra, founder of the IMDEA Networks Institute, whose vision and leadership have been instrumental in positioning the institute at the forefront of global research in networks and communications.

More info

NEWS

Cluster 4 HE Sessions – Driving Digital Innovation and Public-Private Collaboration

22 May 2025

On 22 May, IMDEA Networks, in collaboration with the Centre for the Development of Industrial Technology (CDTI), organised the Horizon Europe Cluster 4 Info Day. The event was funded by the Ministry of Science, Innovation and Universities (MICIU) and the State Research Agency (AEI), within the framework of the INCREASE-HE project. The aim of this initiative is to strengthen IMDEA Networks' participation in Horizon Europe, acting as a driving force to encourage the involvement of Spanish organisations—particularly companies—in the EU Framework Programme.

More info

4ESO+Empresa Programme

8-9 April 2025

Over two days, on 8 and 9 April, 18 students in 10th grade (4th year of secondary education) took part in an educational stay at IMDEA Networks to gain first-hand insight into how work is carried out at an international technology research centre. This initiative is part of the 4ºESO+Empresa programme of the Community of Madrid, which promotes early experiences of contact with the professional world and helps students orient their academic and career paths.

The group, coming from IES Isaac Albéniz, IES Arquitecto Peridis, IES Maestro Matías Bravo, and IES Francisco Umbral, had the opportunity to explore the day-to-day life of the institute and to discover different professional profiles ranging from administration to engineering and scientific research.

More info

NEWS

14th Madrid is Science Fair

27-29 March

IMDEA Networks took part in the 14th edition of the Madrid es Ciencia Fair, a science outreach event organized by the madri+d Knowledge Foundation, aimed at both school audiences and the general public.

At our stand, visitors enjoyed a wide range of interactive activities to learn about technology. They discovered in a fun way how binary and decimal number systems work, experimented with 7-segment displays, and explored electromagnetic wave phenomena using a state-of-the-art radar system. They also stepped into the world of quantum computing in a simple and accessible way and tested their skills with artificial intelligence games, learning how to transmit data through light and discovering the secrets of blockchain technology.

In addition, attendees took part in computer vision demonstrations, from space rocket challenges to emoji facial recognition (with privacy protection ensured), and learned how Dijkstra's algorithm works to find the shortest path between, for example, a Netflix content server and a television.

To further inspire new generations, a game was also designed to highlight the contributions of women in science and technology.

More info

International Day of Women and Girls in Science

11 February 2025

NEWS

As part of the International Day of Women and Girls in Science, on 11 February IMDEA Networks organized an educational talk at Liceo San Pablo in Leganés for students in 10th grade (4th year of secondary education) and 11th grade (1st year of sixth form). The main goal was to bring the fascinating world of STEM (science, technology, engineering, and mathematics) closer to female students and to encourage their interest in these highly demanded fields, where women are still underrepresented.

The activity, part of the Researchers at Schools initiative funded by the European Union under the Horizon Europe Programme and as part of the Marie Skłodowska-Curie Actions, is an example of how to inspire future women scientists and promote gender equality in such a key field as science and technology. The session featured Livia Chatzieleftheriou, a Juan de la Cierva postdoctoral researcher at IMDEA Networks.

More info

5.4.2. Workshops, seminars & lectures

Weekly seminars alternated invited talks with presentations by internal researchers. These events were organized together with prestigious institutions such as University Carlos III of Madrid, TU Darmstadt, Northeastern University, University of Porto and the Queen Mary University of London. The topics ranged from scientific presentations to technology-transfer oriented talks. All events were held in Madrid. Out of the 36 total number of events in which the Institute participated during 2025, 11 of our events were conducted by invited speakers. We list the latter here:

Towards Resilient Decentralized Networked Systems

Matthias Hollick, Full Professor of Computer Science at the Technical University of Darmstadt

16 July 2025

IoT Threats and Security
Mathieu Kokoly Kourouma, Professor of Computer Science at Southern University Baton Rouge, Louisiana, United States
3 July 2025

Software Defined Inception: When your Programmable Switches Turn into your Emulation and Traffic Generation Toolbox
Christian E. Rothenberg, Associate Professor at University of Campinas, Brazil
30 June 2025

A Glimpse into Convex Agreement
Diana Ghinea, Senior Research Associate at the Lucerne University of Applied Sciences and Arts (HSLU)
9 May 2025

From Idea to Reality: The Five Pillars of Sustainable Startup Growth
Alfredo Redondo, Distinguished telecommunication industry executive
10 April 2025

Workshop on Scientific Writing Skills
Jordi Pérez Colomé, Technology reporter at El País
2 April 2025

Multiscale Radio Reconfigurations: A Trace-Driven Approach to Estimating Network Performance
Juan Montes, PhD Student at Universidad Carlos III of Madrid, Spain
5 March 2025

Privacy-preserving Data Obfuscation for Credit Scoring
Vittorio Prodomo, PhD Student at Universidad Carlos III de Madrid, Spain
26 February 2025

Decentralising social networks? An in-depth analysis of Bluesky
Ignacio Castro at Assistant Professor Queen Mary University
20 February 2025

Beyond Location Traces: Compromising User's Privacy with Wi-Fi Data
Mariana Cunha, PhD Student at the University of Porto, Portugal
19 February 2025

Improving resource utilization in nowadays data centers
Eduardo Baena, Postdoctoral researcher at Northeastern University's Institute for the Wireless Internet of Things
29 January 2025

5.4.3 Media impact

Media impact 2025

22
Web news

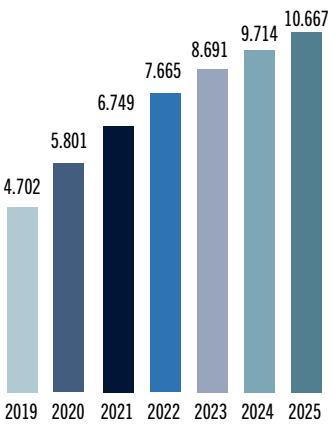
16
Press releases

559
Social networks posts

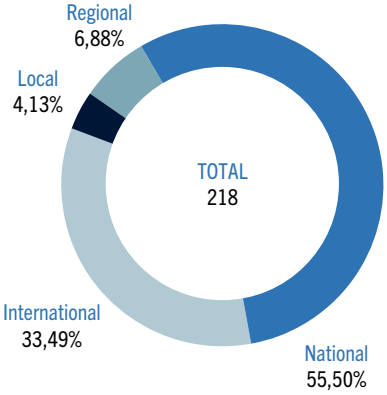
10.667
Social networks followers 2025

2.030	406	780	6.832	619

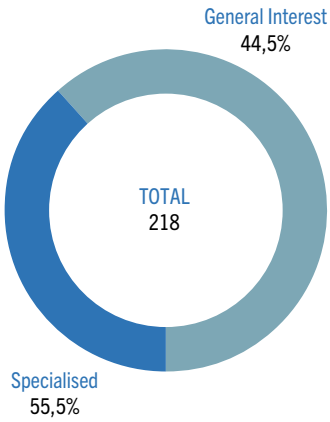
community growth



Impacts by coverage



Impacts by content




AlphaGalileo Foundation
EurekAlert! AAAS
TeleMadrid
sinc
notiweb
COPE
SER
EL MUNDO
dcyt
total telecom
rtve
laSexta
ABC
Tech Xplore
INNOVASPAIN 10 AÑOS
PERIÓDICO LÍDER DE LA INNOVACIÓN
EL PAÍS
Science
LA VANGUARDIA
THE FAST MODE
R&T REDES&TELECOM
fundación para el conocimiento madrid
EFE
ZONA MOVILIDAD
ACTIVO LEGANÉS
europa press
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Diario de seguridad y tecnología

Some media impacts

The future of mobile gaming: Less latency, more fun thanks to edge computing

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Tech Xplore Topics Week's top Latest news

Home / Internet
Home / Consumer & Gadgets

JANUARY 30, 2025

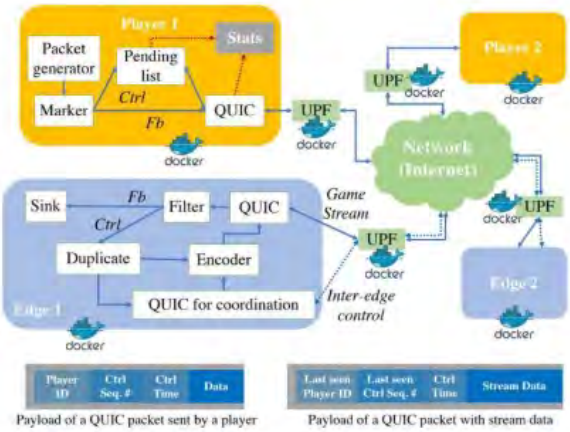
The future of mobile gaming: Less latency, more fun thanks to edge computing

by IMDEA Networks Institute

Editors' notes

The GIST

Add as preferred source



Payload of a QUIC packet sent by a player

Payload of a QUIC packet with stream data

Experimental setup. To enable the computation of statistics, control (Ctrl) and stream packet...

A recent study titled "Gaming on the Edge: Performance Issues of Distributed Online Gaming," published at the IFIP International Conference on Networking 2024, proposes an innovative model to enhance the experience of online gaming, particularly on mobile devices. Led by an international team of researchers—including Professors Marco Ajmone and Vincenzo Mancuso from IMDEA Networks—the study explores how edge computing can transform Gaming as a Service (GaaS) by significantly improving performance.

innovaspain
PERIÓDICO LÍDER DE LA INNOVACIÓN

Albert Banchs (IMDEA Networks): “Vamos a crear inteligencia federativa para llevar la IA al móvil”

More info

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PERIÓDICO LÍDER DE LA INNOVACIÓN

> ENTREVISTAS

Albert Banchs (IMDEA Networks): “Vamos a crear inteligencia federativa para llevar la IA al móvil”

Entrevistamos al nuevo director de IMDEA Networks, perteneciente a la red centros de investigación de excelencia radicados de la Comunidad de Madrid. La necesidad de fortalecer la industria española, la mejora de la eficiencia energética o las exigencias derivadas de la IA centran la conversación

LA RAZÓN

Albert Banchs, de Imdea Networks: «Necesitamos detectar cuándo salen nuestros datos del móvil»

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LA RAZÓN

MADRID VIVIR

Albert Banchs, de Imdea Networks: «Necesitamos detectar cuándo salen nuestros datos del móvil»

El flamante director del Instituto Madrileño de Estudios Avanzados en redes analiza nuevos retos tecnológicos como la adaptación al 6G y la IA o la protección de nuestra privacidad

▲Albert Banchs, de Imdea: «Necesitamos detectar cuándo salen nuestros datos del móvil» IMDEA

RODRIGO CARRASCO

R&T REDES&TELECOM

Concluye COMET, proyecto que analiza el impacto de las amenazas digitales

More info

PROYECTOS

Concluye COMET, proyecto que analiza el impacto de las amenazas digitales

Home > Seguridad

Esta iniciativa, financiada por el Ministerio de Ciencia de España y la UE, ha logrado grandes avances en el estudio de software malicioso, el fraude online y la propagación de desinformación en las redes sociales

Publicado el 10 feb 2025

Redacción RedesTelecom

Concluye COMET, proyecto que analiza el impacto de las amenazas digitales

mdea Networks ha finalizado con éxito su participación en el proyecto **COMET**, una iniciativa financiada por el Ministerio de Ciencia, Innovación y Universidades de España y la Unión Europea a través de los fondos NextGenerationEU/PRTR.

ABC

Arturo Azcorra: «La educación en el colegio es importantísima: ahí se forman los cimientos del futuro»

More info

SER

Un proyecto en el que participa IMDEA Networks logra significativos avances sobre el fraude online

More info

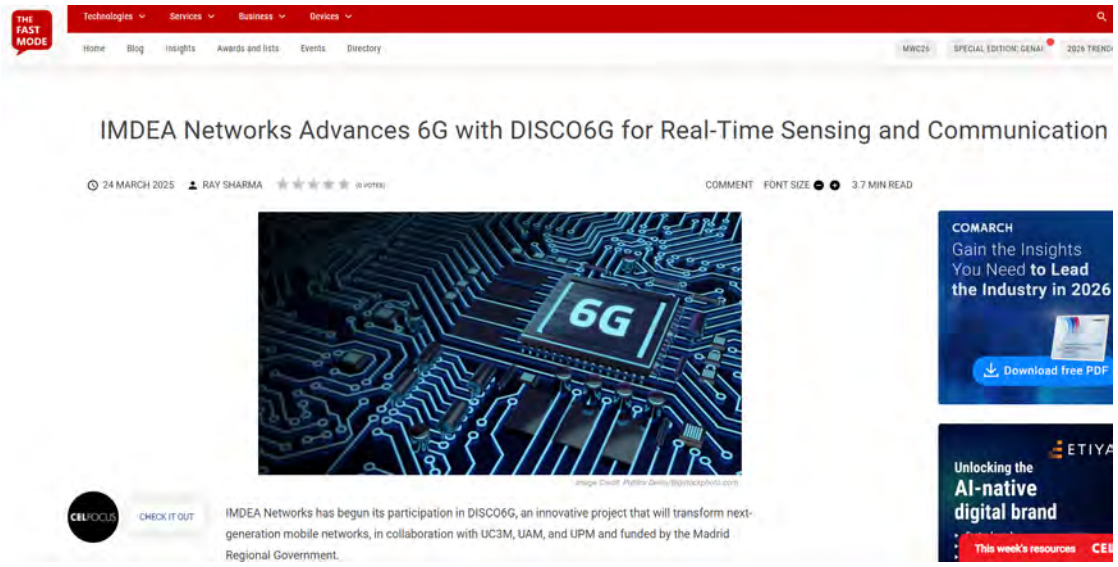

Un proyecto en el que participa IMDEA Networks logra significativos avances sobre el fraude online

El Instituto Madrileño de Estudios Avanzados (IMDEA) Networks, con sede en Leganés, ha participado en un proyecto en el que también se han estudiado los software malicioso y la desinformación en redes

THE FAST MODE

IMDEA Networks Advances 6G with DISCO6G for Real-Time Sensing and Communication

More info



MCPRO

IMDEA Networks participa en proyecto europeo para crear redes 6G que interactuen con inteligencia con la realidad

More info

R&T REDES&TELECOM

Proyecto ECOMOME: eficiencia energética de las redes móviles

More info

PROYECTOS

Proyecto ECOMOME: eficiencia energética de las redes móviles

Home > Infraestructuras

Esta iniciativa, en la que ha participado Imdea Networks, busca optimizar el consumo energético en las redes móviles. Se ha centrado en servicios como el streaming de vídeo, la mensajería y las llamadas, explorando tecnologías como network slicing, computation offloading y planos de datos programables

Escudodigital
Diario de seguridad y tecnología

La ciberdelincuencia como ecosistema: una mirada desde la investigación aplicada

More info


Escudodigital

OPINIÓN

La ciberdelincuencia como ecosistema: una mirada desde la investigación aplicada

A día de hoy, la ciberdelincuencia se comporta como un ecosistema sofisticado, interconectado y altamente profesionalizado.

Las plataformas integradas limitan la complejidad de la ciberseguridad.

Guillermo Suárez-Tangil
Ramón y Cajal Fellow y Profesor en IMDEA Networks

Publicado el 05 de mayo de 2025 a las 07:00

Desde hace casi quince años mi labor como investigador se ha centrado en entender cómo se manifiestan y evolucionan las amenazas digitales. En este tiempo, hemos pasado de hablar de virus informáticos como algo anecdótico a vivir en un mundo hiperconectado, donde los ciberataques afectan a gobiernos, empresas y ciudadanos por igual. A día de hoy, la ciberdelincuencia se comporta como un ecosistema sofisticado, interconectado y altamente profesionalizado.

Promoción

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El proyecto Tucan6-CM desarrollará tecnología innovadora para redes 6G sostenibles, inteligentes y resilientes

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El proyecto Tucan6-CM desarrollará tecnología innovadora para redes 6G sostenibles, inteligentes y resilientes

Publicado: 13/05/2025

El proyecto Tucan6-CM tiene el objetivo de ransformar las redes móviles de próxima generación mediante una integración eficiente de tecnologías de comunicación, computación y sensado para responder a los grandes retos de conectividad del futuro, mejorando la calidad de vida, la sostenibilidad y la seguridad en diferentes ámbitos.

LAECUACIÓNDIGITAL

España impulsa el desarrollo del 6G con avances en IA, privacidad y eficiencia energética

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LAECUACIÓNDIGITAL

ACTUALIDAD TRANSFORMACIÓN DIGITAL EMPRESAS TECNOLOGÍAS DISPOSITIVOS ANÁLISIS Y OPINIÓN

NOTICIAS DESTACADAS

España impulsa el desarrollo del 6G con avances en IA, privacidad y eficiencia energética

28 MAYO 2025

→ ENABLE-6G culmina con avances punteros españoles en IA aplicada al 6G: detección segura Open RAN, aprendizaje federado privado y eficiencia energética.

PUBLICIDAD

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Ferias y exposiciones sec...

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Tecnologia empresarial

Eventos corporativos

EL PAÍS

Este es el método oculto con el que Meta rastrea sin permiso la navegación en móviles (también en modo incógnito o con VPN)

More info

Este es el método oculto con el que Meta rastrea sin permiso la navegación en móviles (también en modo incógnito o con VPN)

Un grupo de investigadores descubre el sistema que usan las apps de Instagram y Facebook desde septiembre de 2024 para reunir el historial web de cada usuario en sus dispositivos Android

El presidente ejecutivo de Meta, Mark Zuckerberg, sale de la Comisión Federal de Comercio en Washington el pasado 15 de abril. NATHAN HOWARD (REUTERS)

JORDI PÉREZ COLOMÉ
03 JUN 2025 - 14:03 CEST

El profesor de privacidad y rastreo online Günes Acar, de la Universidad Radboud (Países Bajos), quería divertirse con sus alumnos de máster, así que se puso a buscar un ejemplo curioso de rastreo en la web de su universidad: "Sabía que la página tenía varios rastreadores, incluyendo el de Facebook. Pero de repente vi que había una conexión con un puerto local, o sea, con mi propio ordenador. Al principio no entendí nada". Acar empezó a mirar en internet por si alguien más se hubiera dado cuenta. Encontró algunos foros de desarrolladores de Facebook donde se quejaban de lo mismo. "Pero Facebook no respondía, y luego alguien añadió: 'Ya no lo veo más'. Pero no es que Facebook parara, solo cambiaron a otro método aún más oculto", dice Acar.

Acar consultó el caso con Narseo Vallina-Rodríguez, investigador de Imdea Networks y especialista en seguridad y privacidad de apps móviles. "Pero cómo demontos...", fue su primera reacción. ¿Podría Meta estar intentando algo nuevo para sortear los permisos de privacidad de los navegadores? Solo leyendo el código no podía averiguarse. Tuvieron que probar conexiones entre páginas y Facebook e Instagram, apps de Meta, para ver

ÚLTIMAS NOTICIAS

12:55 | Kris Jenner convierte su cirugía estética en un negocio: saca a la venta camisetas y gorras

12:19 | Jordi González reaparece en televisión y cuenta su experiencia al borde de la muerte: "He cambiado las prioridades de todo y hay cosas que no haré más"

12:11 | Una bala de goma alcanza a una periodista australiana en las protestas de Los Ángeles

12:08 | García Ortiz, el fiscal que no tuvo ni un minuto de tregua

LA VANGUARDIA

Expertos desvelan que el 5G no siempre ofrece conexiones más rápidas que el 4G

More info

INVESTIGACIÓN TELECOMUNICACIONES

Expertos desvelan que el 5G no siempre ofrece conexiones más rápidas que el 4G

• Leganés, 25 sep (EFE).- Un estudio liderado por el IMDEA Networks Institute ha desvelado que el 5G, a pesar de estar ampliamente desplegado en los grandes núcleos urbanos, no siempre se traduce en una experiencia mejor para el usuario que la del 4G, ya que depende del operador y del lugar de conexión.

AGENCIAS
25/09/2025 14:45

Leganés, 25 sep (EFE).- Un estudio liderado por el IMDEA Networks Institute ha desvelado que el 5G, a pesar de estar ampliamente desplegado en los grandes núcleos urbanos, no siempre se traduce en una experiencia mejor para el usuario que la del 4G, ya que depende del operador y del lugar de conexión.

SER

De un órgano medieval que vuelve a sonar 800 años después al hormigón “autosensible”: el talento que esconden las Becas Leonardo 2025

More info

De un órgano medieval que vuelve a sonar 800 años después al hormigón "autosensible": el talento que esconden las Becas Leonardo 2025

La Fundación BBVA apoya con hasta 50.000 euros a 59 investigadores y creadores que exploran desde la música medieval hasta la inteligencia artificial

Lo más leído

El problema real de Fede Valverde va más allá de su posición en el campo: "Eso es lo que le tiene realmente desubicado"

02/10/2025

Boyero se deshace de elogios a la serie del momento: "Agradezco mucho que te hagan reír"

TeleMadrid

Diseñan un Sistema que acortaría de 20 a 6 minutos el tiempo que se tarda en aparcar en Madrid

More info

MOVILIDAD

Diseñan un sistema que acortaría de 20 a 6 minutos el tiempo que se tarda en aparcar en Madrid

— Un equipo de investigación de IMDEA Networks de la Comunidad de Madrid ha desarrollado un sistema de coordinación, llamado Cord- Approx, que reduce significativamente el tiempo de búsqueda de aparcamiento

ZONA MOVILIDAD

NEXTONIC, el laboratorio 5TONIC evoluciona para liderar la innovación en redes 6G

More info

ZONAMOVILIDAD

Novedades | Pruebas | Noticias | Deportes y Tecnología | Hogar Inteligente | Ciberseguridad | Medio Ambiente | Aplicaciones | Tecnología | Zona Empresas | Motor

NEXTONIC, el laboratorio 5TONIC evoluciona para liderar la innovación en redes 6G

SER

IMDEA Networks desarrolla en Leganés una marca de agua para documentos digitales

More info


Hora 14 Madrid Sur

Ciencia y tecnología LEGANÉS

IMDEA Networks desarrolla en Leganés una marca de agua para documentos digitales

Es la herramienta FreqyWM que podrá ser utilizada por empresas e instituciones públicas para evitar filtraciones

Esta herramienta de seguridad puede usarse en entornos de inteligencia artificial / picture alliance

rtve

OFFF Sevilla, el rastreo de datos, los espejos de SpecialGuestX, Skate Story

More info

impact and technology transfer

annual report 2025

www.networks.imdea.org

6.1. Patents

Patents are important steps in the process of **transferring technology to marketplace.** Patent creation has strong implications for the Institute: patents are incentives for their creators, as they imply recognition for their creativity and material reward when these inventions are marketable. These incentives encourage innovation, the guarantee to the continuous improvement in the quality of research and, ultimately, of human life. It is IMDEA Networks Institute's policy to share a very high percentage of financial proceeds with inventors (our researchers) as reward for their excellence and hard work.

US patent granted in September 2025

Title: RF backscatter system based on light fidelity
Inventors: Domenico GIUSTINIANO, Borja GENOVÉS GUZMÁN, Sarmad MIR
Rights: IMDEA Networks Institute
Overview: The present invention is related to a low-power backscatter system comprising a LiFi, "Light Fidelity", transmitter configured for generating and transmitting an optical signal comprising a sequence of a downlink data signal and a chirp signal and an IoT, "Internet of Things", tag.
Application number: EP4164143A1
Application number (International application No.): WO2023057618A1
Application number USA, Canada and Singapore: US20240080098A1 | CA3204806A1 | 11202306367X

6.2. Technology transfer

We direct our work towards strengthening collaboration ties with industry, particularly through joint participation in projects and technology transfer. We aim to develop technologies that have genuine socio-economic impact; that is to say, projects that deliver value and that can be transferred to industry and, ultimately, to society. In order to ensure that our focus remains on addressing real-world problems and that our development activities result in generating value, we continue to build on our strong links with the business community both in the Madrid region of Spain and in the rest of the World.

Our technology transfer strategy is aimed to ensure that the Institute's research activities remain relevant, that its innovations are diffused and their full value to society realized through various transfer processes such as licensing and the sale of patents, creation and support of spin-off companies in the region that seek to commercialize products exploiting

innovations developed within the Institute. We carry out several forms of collaboration, including direct contracts with industry, as well as participation in joint projects financed by public entities. Our projects include both types of partnerships with specific listings of those enterprises and organizations currently working with us.

Joint, funded research projects enable us to establish solid ties to business. We are engaged in various research projects with private sector collaborators:

6.2.1. Ongoing contracts

SUNRISE

Funded by: Technology Innovation Institute of Abu Dhabi
Duration: September 2024 to March 2027
Sunrise-secure unmanned aerial optical systems.

5GPOS+

Funded by: Ericsson
Duration: June 2024 to December 2026
Enhanced 5G positioning accuracy in challenging environments

MM-SENSE

Funded by: HUAWEI TECHNOLOGIES DUESSELDORF GmbH
Duration: March 2024 to March 2026
Multi-static micro-doppler-based sensing for object detection and recognition.

FRP 51

Funded by: Flashbots
Duration: May 2025 to December 2025
Arbitrage Detection in Prediction Markets

6.2.2. Other forms of collaboration with the private sector

Telefónica - IMDEA Networks Joint Research Unit in 5G technologies

IMDEA Networks and Telefónica Research and Development continue collaborating on their Joint Research Unit (JRU), which was created in May 2014. The JRU is also known under the name «Telefónica - IMDEA Networks Joint Research Unit in 5G technologies». The development of 5G has already become a landmark in the global competition for technologi- cal leadership. Over a period of seven years up to 2020, this private-public alliance will share a wealth of know-how and in-house capabilities to tackle the challenge of creating a blueprint for the new technology and the standards that are to define future ICT networks.

Located at IMDEA Networks' headquarters in Madrid, the aim of the JRU Telefónica I+D - IMDEA Networks is to establish a strategic partnership that provides an operational framework for close interaction in a varied set of scientific activities. In particular, the JRU brings together a team comprising highly specialized multidisciplinary profiles ready to work collaboratively on externally funded R&D projects. One of the main areas in which this collaboration is reflected is the program «Advanced 5G Network Infrastructure for Future Internet PPP», sponsored by the EU Commission within the Horizon 2020 program.

The private-public alliance shares a wealth of know-how and in-house capabilities to tackle the challenge of creating a blueprint for the new technology and the standards that are to define future ICT networks. Work led by experienced researchers Diego R. López from Telefónica I+D and Arturo Azcorra, Joerg Widmer and Albert Banchs, from IMDEA Networks, focuses on key 5G enablers such as flexible functional split, joint handover optimization, 60GHz wireless networks, network function operating systems, secure virtual computing and green networking.

NEXTONIC - An Open Research and Innovation Laboratory focusing on advanced network technologies

NEXTONIC (initially 5TONIC) is an open research and innovation laboratory focusing on 5G technologies that was founded by Telefonica and IMDEA Networks Institute in 2015. The first laboratory of 5G excellence in Spain also counts with Ericsson Spain, University Carlos III of Madrid, InterDigital and Capgemini Engineering amongst its members. During 2025, Cayetano Carbajo, Core and Transport Director at Telefónica GCTIO, served as 5TONIC Chairman, and Carlos Bernados, professor at Universidad Carlos III Madrid, the 5TONIC Vice-chairman.

The objective of NEXTTONIC is to create a global open environment where members from industry and academia work together in specific research and innovation projects related to 5G and 6G technologies with a view to boost technology and business innovative ventures. The laboratory promotes joint project development and entrepreneurial ventures, discussion fora, events and conference sites, all in an international environment oriented to achieve the highest technological impact in the area of 5G.

NEXTONIC is focused in covers four major domains.

- **Network Virtualization** focuses on NFV & SDN for cloud-native mobile network architectures, Cloud RAN & Disaggregation for flexible multi-tenant and energy-efficient deployments via Open RAN functional splits, and the Edge/Cloud Continuum & NaaS concept enabling verticals to leverage virtualized capacity across 5G/6G connectivity chains with federated operators.

- **Internet of Things** addresses IoT & Machine Type Communications (MTC) with solutions for density challenges such as simplified authentication and large-scale addressing, alongside tailored vertical-sector solutions for finance, energy, health, and public administration.

- **Wireless Systems** encompasses 5G/6G air interface research—testing next-generation physical and MAC layer technologies including high-frequency bands above 6 GHz, mmWave, and advanced beamforming—as well as dynamic spectrum sharing and advanced interference cancellation across multiple frequency bands.

- Finally,**Quantum Communications** covers QKD Networks with virtualized and disaggregated quantum key distribution management based on SDN and ETSI-aligned orchestration, along with a Hybrid Quantum Testbed that integrates commercial QKD and post-quantum cryptography (PQC) devices for joint validation of quantum and post-quantum security solutions.

The main NEXTTONIC Research & Innovation Laboratory site is located at IMDEA Networks. The Institute is one of the main leaders at European level in the field of 5G and 6G networks. Among 5G and 6G European research projects supported by the lab are the ongoing &G VR, TrialsNet, DESIRE6G, and Hexa-X-II.

NEXTONIC Members

Telefónica

institute imdea networks

ERICSSON

interdigital

uc3m

Capgemini engineering

NEXTONIC Collaborators

ABB

intel.

YBVR

Telcaria

NOKIA BELL LABS

Open Nebula

gmv

ROHDE&SCHWARZ

Fivecomm

Atos

6.2.3 Industry partners

Our technology transfer activities have led to a significantly increased portfolio of companies we collaborate with. During 2025, they were the following:

Amped Software

Apple Technology Engineering BV&CO

BubbleRAN

Cumucore Oy

DigitalSign

eBOS Technologies Ltd

EMNIFY

FOGUS INNOVATION & SERVICES

Found.Ation

Fundación Vithas

GMV Aerospace and Defence S.A.U.

Guardtime OU

Interdigital Europe, Ltd

ISRD

Konnekt Able Technologies Limited

Lstech Espana SL

NEC Europe Ltd.

Nokia Bell Labs Deutschland AG

Nokia Solutions and Networks Oy

Nova Telecommunications SMSA

NXP Semiconductors

Orange

pureLiFi Ltd.

Qascom

Bosch / Robert Bosch GMBH

Securiq Sistemas Slu

Siemens AG

Telecom Italia S.p.a
29. Televic Healthcare

Thales

Turn Key Ai Solutions

SILICON AUSTRIA LABS GMBH

Inavitas

Acciona

Cox

National Instruments Dresden GmbH

Telefónica I+D

Ford Otomotiv Sanayi Anonim Sirketi

Ranplan Wireless Networks Design LTD

Trilateral Research

Eurotux Informatica S.A.

Semantic Web Company (SWC)

Nextworks

Hellenic telecommunications organization S.A.

We continue to build firm relationships and sound collaborative arrangements with these companies and other key players in the field, including various regional, national and international bodies.

personnel

faculty

director

The Director is the CEO of the Institute. He is appointed by the Board of Trustees amongst scientists with a well-established international reputation in computer networking. The Director fosters and supervises the activities of IMDEA Networks Institute, and establishes the distribution and application of the available funds in accordance with the Institute's strategic goals and within the limits established by the Board of Trustees. The Director reports regularly to the Board. He is aided by the Scientific Council in determining the scientific research strategy and associated policies. The Deputy Director, the Research Director and the General Manager also assist the Director.

Dr. Albert BANCHS

Director

Research: Beyond 5G; Mobile Networks; Network Algorithms and Protocols; Smart Networks; Computational-aware networking

Personal Site

Short Bio

Dr. Albert Banchs received his M.Sc. and Ph.D. degrees from the Polytechnic University of Catalonia (UPC-BarcelonaTech) in 1997 and 2002, respectively. He is currently a Full Professor with the University Carlos III of Madrid (UC3M), with double affiliation as Deputy Director of the IMDEA Networks institute. Before joining UC3M, he was at ICSI Berkeley in 1997, at Telefonica I+D in 1998, and at NEC Europe Ltd. from 1998 to 2003. He was an Academic Guest at ETHZ in 2012, a Visiting Professor at EPFL in 2015 and 2013 and a Fulbright scholar at University of Texas at Austin in 2019. Prof. Banchs authors over 150 publications in international conferences and journals, and is the co-inventor of several patents.

deputy director

(vacant)

The Deputy Director provides assistance to the Director in the fostering and supervision of the scientific activities of the Institute and of its administrative management.

research professors

Research Professors are our most published and cited researchers. They are recognized and respected leaders in their field of research. They have already made a difference. Their expertise and research interests have a significant impact on the Institute's scientific output and on the careers of their charges.

Dr. Joerg WIDMER

Research Professor (tenured) & Research Director

Research: Wireless Networking; Millimeter-Wave Communication; Wireless Sensing and Localization; Mobile Network Architectures

Personal Site

Short Bio

Dr. Joerg Widmer is Research Professor and Research Director of IMDEA Networks in Madrid, Spain. Before, he held positions at DOCOMO Euro-Labs in Munich, Germany and EPFL, Switzerland. His research focuses on wireless networks, ranging from extremely high frequency millimeter-wave communication and MAC layer design to mobile network architectures. He authored more than 200 conference and journal papers, 3 IETF RFCs, and 17 patents. He received an ERC consolidator grant, the Friedrich Wilhelm Bessel Award of the Humboldt Foundation, a Ramon y Cajal grant, as well as 13 best paper awards. He is Fellow of the IEEE and Distinguished Member of the ACM.

Dr. Marco FIORE

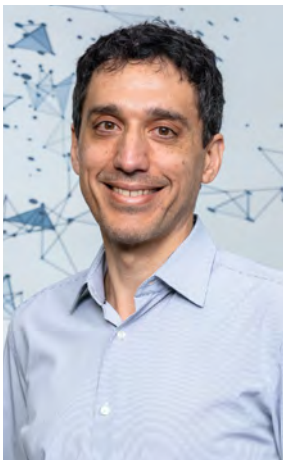
Research Professor

Research: Mobile Networking; Data Science; Network Intelligence; Computational Sociology

Personal Site

Short Bio

Marco Fiore is a Research Professor at IMDEA Networks Institute, where he leads the Networks Data Science group, and co-founder and CTO at Net AI, a UK-based network intelligence company. He received MSc degrees from University of Illinois at Chicago and Politecnico of Torino, a PhD degree from Politecnico di Torino, and a Habilitation à Diriger des Recherches from Université de Lyon. Marco has held tenured positions at Institut National des Sciences Appliquées de Lyon and National Research Council of Italy, and has been a visiting researcher at Rice University, Universitat Politècnica de Catalunya, and University College London. Marco's research is at the interface of mobile networks and data science, and has received multi-million Euro funding from the European Commission and national agencies in Spain, France and Italy, as well as a number of recognitions that include two best paper awards at IEEE INFOCOM. Marco is a former Marie Curie fellow and Royal Society visiting research fellow, and a Senior Member of IEEE and ACM.



Dr. Domenico GIUSTINIANO

Research Professor

Research: 6G localization; Battery-free IoT Networks; Unmanned aerial networks

Personal Site

Short Bio

Dr. Domenico Giustiniano is a tenured Research Professor at IMDEA Networks Institute, where he leads the Pervasive Wireless Systems Group. Previously, he was a Senior Researcher and Lecturer at ETH Zurich and held postdoctoral roles at Disney Research Zurich and Telefonica Research Barcelona. He earned his PhD in Telecommunication Engineering from the University of Rome Tor Vergata in 2008. His work has appeared in leading venues including ACM MobiCom, CoNEXT, IEEE INFOCOM, and top IEEE/ACM journals. He also completed executive education at IE Business School and has co-founded initiatives including Sensory-Fi, OpenVLC, and the Electrosense association.

Dr. Nikolaos LAOUTARIS

Research Professor

Research: Privacy; Transparency/ Data Protection; Economics of Networks and Information; Intelligent Transportation; Distributed Systems; Protocols; Network Measurements

Personal Site

Short Bio

Dr. Nikolaos Laoutaris is a research professor at IMDEA Networks Institute in Madrid. Prior to that, he was director of data science at Eurecat and chief scientist of the Data Transparency Lab, which he co-founded in 2014 during his 10-year tenure as a researcher and senior researcher of Telefonica Research in Barcelona. Before Telefonica, he was a postdoc fellow at Harvard University and Marie Curie postdoc fellow at Boston University. He got his PhD in computer science from the University of Athens in 2004.

research associate professors

Research Associate Professors are typically researchers with several years' experience who assume a position of responsibility in leading the day-to-day activities of our research teams.

Dr. Sergey GORINSKY

Research Associate Professor

Research: Computer Networks; Distributed Systems; Network Economics

Personal Site

Short Bio

Dr. Sergey Gorinsky is a tenured Research Associate Professor at IMDEA Networks Institute where he leads the NetEcon (Network Economics) research group. He joined IMDEA in 2009 and held a Ramón y Cajal Fellowship funded by the Government of Spain from 2010 to 2014. Prior to that, Dr. Gorinsky served on the tenure-track faculty at Washington University in St. Louis from 2003 to 2009. He received his Ph.D. and M.S. degrees from the University of Texas at Austin and an Engineer degree from Moscow Institute of Electronic Technology. Dr. Gorinsky's research focuses on computer networking, distributed systems, and network economics. He has made contributions in areas such as CDN caches and their deployment, interconnection economics, real-time scheduling, congestion control, video streaming, and data-plane algorithms. His work has been published in top venues including SIGCOMM, NSDI, INFOCOM, CoNEXT, IEEE/ACM Transactions on Networking, and IEEE Journal on Selected Areas in Communications. Dr. Gorinsky has contributed extensively to the research community as TPC chair of ICNP 2017, general chair of SIGCOMM 2018 and ICNP 2020, and TPC member of numerous major conferences. He is a seven-time recipient of the INFOCOM Distinguished TPC Member Award and evaluates research for agencies such as the European Research Council.

Dr. Narseo VALLINA-RODRÍGUEZ

Research Associate Professor

Research: Cybersecurity; Network Measurements; Privacy

Personal Site

Short Bio

Narseo Vallina (Ph.D. at Cambridge University) is an Associate Research Professor at IMDEA Networks where he leads the Internet Analytics Group (IAG). He is also one of AppCensus' co-founders. Narseo's research interests fall in the areas of network measurements, cybersecurity, online privacy, and digital rights. Before joining IMDEA, he was a research scientist at ICSI at Berkeley (USA). Narseo's research efforts received best paper awards at prestigious conferences such as IEEE Symposium on S&P, USENIX Security, and ACM IMC, amongst others. For his contributions, he has been selected as ACM Senior Member and a Ramon y Cajal Fellow in 2021 and recceived the Medal "Jóvenes Investigadores" awarded by the Royal Academy of Engineering in Spain. Data Protection Agencies and key industry players have recognized the societal, regulatory and technical value of his work through distinctions such as a Google Faculty Fellowship, the AEPD Emilio Aced Award, the CNIL-INRIA Privacy Protection Award, or the Caspar Bowden PETS Award.

research assistant professors

Research Assistant Professors at IMDEA Networks Institute are bright researchers at the beginning of their research career, who want to establish a strong research group based on their research vision. They lead their own team of PhD Students and post-doctoral researchers. Research Assistant Professors are not required to teach, so they can focus full-time on research if they so wish.

Dr. Claudio FIANDRINO

Research Assistant Professor

Research: Explainable AI; 5G networks

Personal Site

Short Bio

Claudio is a Research Assistant Professor (Ramón y Cajal Fellow) at IMDEA Networks Institute, Madrid, Spain where he leads the Resilient AI Networking Lab. His primary research interests include explainable and robust AI in 5G/6G networks, AI/ML for the Open RAN and 5G network performance characterization. For his research, Claudio has been awarded with several grants including, besides the Ramón y Cajal Fellowship, Juan de la Cierva grants (Formación and Incorporación), a José Castillejo/Fulbright mobility grant and six Best Paper Awards in renewed events.

Dr. Lucianna KIFFER

Research Assistant Professor

Research: Peer-to-peer networks; security and privacy of blockchain systems; network measurements; game theory

Personal Site

Short Bio

Lucianna Kiffer is a Research Assistant Professor at IMDEA Networks, heading the newly formed Distributed Systems and Networks (DistSys) group. Her research focuses on the foundations of peer-to-peer networks and blockchain systems, including measurement studies, analytical evaluations, and building new protocols. Prior to joining IMDEA Networks, she spent two years as a postdoctoral researcher at ETH Zürich in the Disco (Distributed Computing) lab under the supervision of Roger Wattenhofer and as a distinguished posdoctoral fellow at the Cyber Defense Center of Switzerland. She received her PhD in 2022 from Northeastern University in Computer Science under the supervision of Alan Mislove and Rajmohan Rajaraman, and her B.S. in Mathematics and Computer Science from Tulane University.

Dr. Guillermo SUÁREZ-TANGIL

Research Assistant Professor

Research: Fraud & Cybercrime; Computational Social Science; Safety & AI

Personal Site

Short Bio

Guillermo Suarez-Tangil is Assistant Professor IMDEA Networks and a Ramon y Cajal Fellow. His research focuses on modeling emerging threats in online communities and finding effective mitigation strategies. His background is in systems security and malware analysis and detection, particularly in the study of smart malware, ranging from the detection of advanced obfuscated malware to the automated analysis of targeted malware. He was previously Assistant Professor at King's College London (KCL). Before joining KCL, he worked as a senior research associate at University College London (UCL), where he explored the use of program analysis to study malware. He has also been actively involved in research on detecting and preventing Mass-Marketing Fraud (MMF), as well as security and privacy in the social web. Prior to that, he held a postdoctoral position at Royal Holloway, University of London (RHUL), where he was part of the development team of CopperDroid, a tool designed to dynamically test malware using machine learning to model malicious behaviors. He also has strong expertise in developing novel data learning algorithms for malware analysis. He obtained his PhD in smart malware analysis from with distinction and received the Best National Student Academic Award, a competitive recognition granted to the best engineering thesis in Spain between 2014 and 2015.

part-time professors

research professors

Dr. Marco AJMONE MARSAN

Research Professor

Research: Networking; Performance evaluation

Personal Site

Short Bio

Marco Ajmone Marsan is a part-time research professor at the IMDEA Networks Institute in Spain and an Emeritus Professor of Politecnico di Torino. From 1974 to 2021 he was at the Politecnico di Torino, in the different roles of an academic career, with an interruption from 1987 to 1990, when he was a full professor at the Computer Science Department of the University of Milan. He obtained degrees in EE from the Politecnico di Torino and the University of California, Los Angeles (UCLA). He served in the editorial board of several international journals and chaired the steering committee of the ACM/IEEE Transactions on Networking. He was the General Co-chair of Infocom 2013, and of ICC 2023. He is a Fellow of the IEEE, and a member of the Academia Europaea and of the Academy of Sciences of Torino. He is qualified as "ISI Highly Cited researcher" in computer science. He received an honorary degree in Telecommunication Networks from the Budapest University of Technology and Economics. He was named Commander of the Order of Merit of the Republic of Italy. He was the Vice-Rector for Research, Innovation and Technology Transfer at the Politecnico di Torino, and the Director of IEIIT-CNR. He was the Italian delegate in the ICT and IDEAS Committees of FP7.

Dr. Arturo AZCORRA

Research Professor

Research: 5G Networks and Services; Network Virtualization and Softwarization; Drone Communications; On-line Social Networks Data Analytics; Mammal Brain Cartography and Topology

Personal Site

Short Bio

Dr. Arturo Azcorra graduated in 1980 from Loy-Norrix High School, Michigan. He received his Telecommunication Engineering degree from Universidad Politécnica de Madrid in 1986, and the Doctor degree in 1989 from the same University. He currently is a full professor at Universidad Carlos III de Madrid, and he's also Director of the International Research Institute IMDEA Networks, a very relevant research institution in Europe. On the professional area, Arturo Azcorra is an IEEE Communications Society Senior Member, an Internet Society member, an ACM-SIGCOMM member, a founding member of the Association for Telematics, and also president of the said Association.

Dr. Carlos Jesús BERNARDOS

Research Professor

Research: 5G/6G Mobile Networks; Integrated Sensing and Communication (ISAC); Network Slicing & Virtualization; Internet Standardization (IETF/ETSI); Edge Computing & Network Architecture

Personal Site

Short Bio

Dr. Carlos J. Bernardos is a Full Professor at Universidad Carlos III de Madrid (UC3M) and an Associate Researcher at IMDEA Networks Institute, Madrid, Spain. He received his Telecommunications Engineering degree and his PhD in Telematic Engineering from UC3M in 2003 and 2006, respectively. He has authored more than 150 peer-reviewed publications and holds an H-index of 44 (Google Scholar). He is the author of 17 IETF RFCs, ranking first in Spain for active IETF contributions, and currently serves as Co-Chair of the IETF Internet Area (intarea) Working Group. His research focuses on next-generation mobile networks (5G/6G), Integrated Sensing and Communication (ISAC), network slicing, and edge computing, with an emphasis on architecture design, protocol standardization, and experimental evaluation.

Dr. Antonio FERNÁNDEZ ANTA

Research Professor

Research: Distributed Computing; Networks; Algorithms; Distributed Logs; Data Analysis; Crowdsourcing

Personal Site

Short Bio

Antonio Fernández Anta is a Research Professor at the IMDEA Software Institute and Part-time professor at the IMDEA Networks Institute. He has previously held faculty positions at the IMDEA Networks Institute, Universidad Rey Juan Carlos (URJC), and Universidad Politécnica de Madrid (UPM), where he received an award for his research productivity. He conducted a postdoctoral stay at Massachusetts Institute of Technology (MIT) from 1995 to 1997 and later held sabbatical appointments at Bell Labs (Murray Hill) in 2008–2009 and at the MIT Media Lab in 2016–2017. He has more than 30 years of research experience and has authored over 200 scientific publications. In 2019, he received the "Aritmel" National Computer Science Award. He was also a Mercator Fellow at SFB MAKI in Germany from 2018 to 2024. His recent distinctions include an Honorary Mention (2nd Best Paper) at the Social Impact Track of AAAI Conference on Artificial Intelligence 2024, the Mario Gerla Best Paper Award at MedComNet 2022, and the Best Teaser Award at WoWMoM 2021. He has served as Chair of the Steering Committee of DISC and has been a member of the program and scientific committees of numerous international conferences. He is currently Deputy Editor of The Computer Journal (Oxford University Press). Antonio Fernández Anta received his M.Sc. and Ph.D. in Computer Science from the University of Louisiana in 1992 and 1994, respectively. Prior to that, he completed his undergraduate and graduate studies in Computer Science at UPM in 1988 and 1991, earning national and university awards for his academic performance. He has been a Senior Member of IEEE since 2002 and a member of Association for Computing Machinery (ACM) since 2007.

Dr. Vincenzo MANCUSO

Research Associate Professor

Research: Performance Evaluation; Efficient and sustainable wireless access and edge networks; Network-embedded machine learning; Edge-assisted autonomous driving; Design of opportunistic and sliced mobile networks; Measurements and assessment of mobile networks

Personal Site

Short Bio

Dr. Vincenzo Mancuso is tenured Research Associate Professor at IMDEA Networks Institute, Madrid, Spain. Previously, he was with INRIA (Sophia Antipolis, France), Rice University (Houston, TX, USA) and University of Palermo (Italy), from where he obtained his MSc and PhD. He authored more than 160 peer-reviewed publications focusing on the analysis, design, and experimental evaluation of opportunistic and adaptive protocols and architectures for wireless and edge networks. He is currently focusing on performance evaluation and optimization of connect-compute architectures for wireless access/edge networks, which includes measurements and assessment of mobile networks and services, and on the use of machine learning techniques for the identification of the causes of network performance problems of networked cyber-physical systems.

affiliate professors

Dr. Guillermo CARPINTERO

Affiliate Professor

Research: Photonic integrated circuits; Ultra-broadband wireless communications, millimeter-waves

Personal Site

Short Bio

Prof. Guillermo Carpintero leads PIXEurope team. Has been research associate at University of Cambridge (UK), University College London (UK) and University of Osaka (Japan). Pioneer in the field of integrated microwave photonics. His research combines photonic integration and radiofrequency technologies, developing advanced photonic integrated circuits generating and processing high-frequency signals in the optical domain and demonstrating ultrabroadband wireless data links. Has coordinated 3 European projects in which novel photonic integrated circuits architectures have been demonstrated, including the first fully monolithic photonic-based microwave transmitter and the first photonic-driven phase array antenna. Currently leads Madrid node at IMDEA Networks of the Advanced Photonic Integrated Circuits Pilot Line, a European ChipsJU initiative to accelerate the development of photonic integrated circuit (PIC) technology, a critical enabler for high-speed computing, communications, quantum information systems, and beyond.

Dr. Katia OBRACZKA

Affiliate Professor

Research: Computer networks; dostrobited systems

Personal Site

Short Bio

Katia Obraczka is a part-time research professor at the IMDEA Networks Institute in Spain and Professor of Computer Science and Engineering at UC Santa Cruz. Prof. Obraczka's research interests span the areas of computer networks, distributed systems, and Internet information systems. She is currently serving as Associate Editor for the IEEE Transactions on Mobile Computing as well as ACM Letters in Computer Science.

IMDEA Networks Faculty researchers

senior researchers

Senior Researchers at IMDEA Networks Institute are experienced post-doctorate researchers who are starting to establish their own research area and building their own team of pre-doctorate researchers (PhD students).

Dr. Jose AGUILAR

Senior Researcher

Research: Artificial intelligence; parallel and distributed systems; control systems; combinatorial optimization

Personal Site

Short Bio

Jose Aguilar received the B. S. degree in 1987 (Universidad de Los Andes-Venezuela), the M. Sc. degree in 1991 (Universite Paul Sabatier-France), and the Ph.D degree in 1995 (Universite Rene Descartes-France). He was a Postdoctoral Research Fellow in the Department of Computer Sciences at the University of Houston (1999-2000), and of the H2020-MSCA-COFUND-EU programme in the Department of Automática at the Universidad de Alcala (2020-2022). He has been full Professor at the Universidad de Los Andes, Venezuela, and EAFIT University, Medellín, Colombia. He is a Senior Researcher at IMDEA (Madrid Institute for Advanced Studies), in Madrid, Spain. He is member of the Mérida Science Academy and President of CLEI (Centro Latinoamericano de Estudios en Informática). He has published more than 650 papers and 10 books in journals, books and proceedings of international conferences. Dr. Aguilar has been a visiting research/professor in different universities/laboratories, coordinator or inviting research in more than 20 research/industrial projects, and supervised more than 20 Doctoral Thesis.

Dr. Jesús Omar LACRUZ

Senior Researcher

Research: Integrated Sensing and Communications; System on Chip Design; Embedded Systems; FPGAs

Personal Site

Short Bio

Jesus O. Lacruz is a Senior Researcher at IMDEA Networks Institute, Spain, where he has been contributing to cutting-edge wireless systems research since 2017. He received his Bachelor's degree in Electrical Engineering from Universidad de Los Andes, Venezuela, in 2009 and the PhD degree in Electronic Engineering from Universidad Politécnica de Valencia, Spain, in 2016. His research interests lie in the design and implementation of signal processing algorithms and high-speed digital communication systems on FPGA/SoC platforms, encompassing digital communications, millimeter-wave systems, and joint communication and sensing technologies. He has been actively involved in experimentation and prototyping for 6G wireless networks, integrated sensing and communication systems, and advanced FPGA-based testbeds

Dr. Marius PARASCHIV

Senior Researcher

Research: Quantum Information; Entanglement detection and classification; Tensor Networks

Personal Site

Short Bio

Joined the Human Centric Data Economy group of Prof. Nikolaos Laoutaris in April 2019. His primary research interests are in geometric deep learning (application of machine learning algorithms to graph data). Prior to this, he has worked on a series of projects and collaborations with other IMDEA faculty members, including a comprehensive study of domain classification services and their relative inconsistencies as well as producing a computer vision model. A second research interest is related to the notions of "data value" and the value of individual data providers to a particular service, from an economic but also an information-theoretic perspective.

post-doc researchers

Post-doctoral Researchers at IMDEA Networks Institute are early-stage, post-doctorate researchers who are looking to establish their research career, working with top research professors and a team of young, pre-doctorate researchers (PhD students).

Dr. Prerna AROTE

Post-Doc Researcher

Research: Blockchain Security and Scalability, Decentralized Finance (DeFi), Network Security, and Applied Cryptography

Personal Site

Short Bio

Prerna Arote is a Postdoctoral Researcher in the Distributed Systems and Networks (DistSys) Group at IMDEA Networks Institute in Madrid, Spain, led by Dr. Lucianna Kiffer. Her current research focuses on secure and privacy-preserving protocols for decentralized financial systems. She also serves as a topic editor for the Frontiers in Blockchain journal.

She received her Ph.D. from the Indian Institute of Science (IISc) under the supervision of Dr. Joy Kuri. Her doctoral thesis, "Enhancing Blockchain Security and Efficiency: Solutions for Micropayments, Payment Channels, and IoT Applications," addresses security and scalability challenges in Bitcoin, off-chain solutions, and Ethereum-based IoT applications. Prior to that, she completed M.Tech. in Computer Science with a specialization in Information Security from ABV-IIITM Gwalior and served as an Assistant Professor at Symbiosis Institute of Technology, Pune.

Dr. Antonio BAZCO-NOGUERAS

Post-Doc Researcher

Research: Forecasting; Edge Computing; Artificial Intelligence; Information theory

Personal Site

Short Bio

Dr. Antonio Bazco-Nogueras is a postdoctoral researcher at IMDEA Networks and recipient of the "Atracción de Talento" grant. He joined both the Network Data Science group and the Opportunistic Architectures Lab in 2021. His research interests include embedding intelligence in the network, distributed systems, information theory, and artificial intelligence. He obtained a Ph.D. degree in Telecommunications from Sorbonne Université in 2019. He was a post-doctoral researcher at EURECOM (France) during 2020, and previously he was a predoctoral researcher at Mitsubishi Electric R&D Centre Europe (France) from 2016 to 2019. He was also a Visiting Scholar at University of California–Irvine in 2017 and at University of Edinburgh in 2025.

Dr. Andrea BEDIN

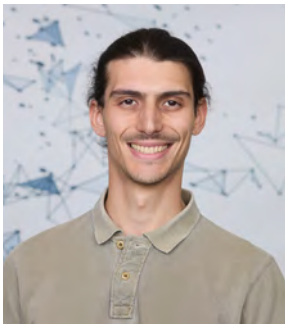
Post-Doc Researcher

Research: Wireless Communication; Integrated Sensing and Communication (ISAC); Carrier phase localization

Personal Site

Short Bio

Andrea Bedin is a postdoctoral researcher at IMDEA Networks, currently working on next-generation wireless communication systems with a focus on wireless localization and sensing. He previously pursued his PhD at Nokia Bell Labs Finland under the MINTS MSCA project, focusing on wireless communications for industrial applications.



Dr. Marco CANIL

Post-Doc Researcher

Research: ISAC; mmWave sensing; 6G; data fusion; data science

Personal Site

Short Bio

Marco Canil is a Juan de la Cierva Research Fellow at IMDEA Networks in Madrid, Spain. He earned his M.Sc. (2020) and Ph.D. (2024) at the University of Padova, Italy, supervised by Prof. Michele Rossi. He has been a visiting researcher at Northeastern University, New York University, and the Centre Tecnològic de Telecomunicacions de Catalunya (CTTC). His research was recognized with the 2022 "Francesco Carassa" Award (GTTI/CNIT) and the Fondazione "Ing. Aldo Gini" Grant. He reviews for multiple journals and conferences and served on the ICDCN 2025 TCP. His primary research interests include ISAC, mmWave sensing, 6G, and data fusion.

Dr. Livia Elena CHATZIELEFTHERIOU

Post-Doc Researcher

Research: Network intelligence; autonomous vehicles; mathematical modeling; mathematical optimization; algorithm design; algorithm analysis; queueing theory

Personal Site

Short Bio

Livia Elena Chatzieleftheriou is a Juan de la Cierva awardee and postdoctoral researcher with the IMDEA Networks Institute, and a part-time Lecturer with the University Carlos III of Madrid (UC3M). She holds an M.Sc. in applied mathematics and a Ph.D. in Computer Science. Her current research interests include mathematical modeling and optimization, algorithm design and analysis, and queueing theory for autonomous vehicles, network intelligence, and next-generation mobile networks.

Dr. Nadezda CHUKHNO

Post-Doc Researcher

Research: Wireless communications; machine learning for networking

Personal Site

Short Bio

Nadezda Chukhno is a postdoctoral researcher at IMDEA Network Institute, Spain. She graduated from RUDN University, Russia, and received her B.Sc. in Business Informatics (2017) and M.Sc. in Fundamental Informatics and Information Technologies (2019). She received her double Ph.D. degree in Information Engineering (2023) from Mediterranea University of Reggio Calabria, Italy and Jaume I University, Spain, within the H2020 MSCA ITN A-WEAR project. Her research activity has focused on wireless networks, with an interest on wearable technologies, multicast, and device-to-device communications. Her current research activity focuses on ML for network traffic forecasting.

Dr. Javad DOGANI

Post-Doc Researcher

Research: Distributed Systems, Cloud/Edge/Fog Computing, Federated Deep Learning, Parallel Computing, and Big-Data Processing

Personal Site

Short Bio

Javad Dogani is a postdoctoral researcher at IMDEA Networks Institute, Madrid, Spain, where he joined the Data Transparency research group in October 2023. His ongoing research pursuits include the development of federated learning models customized to the specific requirements of distributed platforms, such as those employed in edge and fog computing. Javad received his M.Sc. degree in software engineering from Shiraz University in 2012 and completed his Ph.D. in software engineering from the same university in 2023. Before joining IMDEA, he served as a Teaching and Research Assistant at Shiraz University in Iran for nine months, from January to September 2023. Over the last eight years, he has amassed substantial teaching experience, instructing various computer science courses. He also held the Teaching and Research Assistant position at University of Hormozgan in Bandar-abbas, Iran, from 2014 to 2018.

Dr. Edson DOS SANTOS

Post-Doc Researcher

Research: Visible Light Communication; Wireless Communication Transceiver Circuits; IoT and Embedded Systems

Personal Site

Short Bio

Dr. Edson Leonardo dos Santos is a postdoctoral researcher at the IMDEA Networks Institute, in the Pervasive Wireless Systems Group. Before joining IMDEA in 2024, he worked as a professor at SENAI-PR since 2013. He obtained his PhD and Master's degrees in Electrical Engineering from the Federal University of Paraná (UFPR) in 2021 and 2015, respectively. He has been a reviewer for several conferences and journals since 2017. His current research focus is on optical wireless communication systems.

Dr. Dayrene FRÓMETA

Post-Doc Researcher

Research: Next Generation Wireless Networks; Visible Light Communication (VLC); LiFi systems; Millimeter-wave (mm-wave) systems

Personal Site

Short Bio

Dayrene Frómeta is a Postdoctoral researcher of the Pervasive Wireless Systems Group at IMDEA Networks Institute. She obtained her PhD from IMDEA Networks and Universidad Carlos III de Madrid back in June 2024. Her research targets a topic which is how to provide backhaul connectivity to hundreds or thousands of VLC Apps under dense VLC deployments of the IoT.

Dr. Aniketh GIRISH

Post-Doc Researcher

Research: Privacy measurement; Cross-platform tracking; Smart home security; Platform accountability

Personal Site

Short Bio

Aniketh Girish is a Postdoctoral Researcher at IMDEA Networks Institute working at the intersection of privacy, empirical network measurement, and platform governance. His research uncovers hidden data flows and covert tracking techniques across mobile, web, and smart home ecosystems. His work has led to concrete technical and regulatory impact, including changes to Android, browser-level fixes in Chrome and Firefox, and privacy redesigns by major IoT vendors. He publishes at top venues including USENIX Security, IMC, and PoPETs. His findings have informed legislative and regulatory proceedings in both the EU and the US and have been covered by over 100 international media outlets.

Dr. Nina GROSHEVA

Post-Doc Researcher

Research: Network Simulation (ns-3); Millimeter Wave Networking; Performance Analysis

Personal Site

Short Bio

Nina Grosheva is a postdoctoral researcher in the Wireless Networking Group at IMDEA Networks. She obtained her PhD from IMDEA Networks and Universidad Carlos III de Madrid back in March 2024. Previously, she completed an MSc in Communications Engineering at RWTH Aachen University and a BSc in Electrical Engineering at Saint Cyril and Methodius University in Skopje. Her research interest is in mmWave networks, with a particular focus on MAC and network layer design and analysis.

Dr. Devriş İŞLER

Post-Doc Researcher

Research: Cryptography; Privacy; Security; Trustworthy AI; Usable security

Personal Site

Short Bio

Devriş İşler is a researcher working at the intersection of applied cryptography, systems security, data privacy, and trustworthy AI. He received his Ph.D. from IMDEA Networks Institute and Universidad Carlos III de Madrid in December 2025, where his doctoral research focused on data ownership, data provenance, and privacy in the human-centric data economy. His research aims to design secure and privacy-preserving systems that are technically robust, practically deployable, and attentive to the needs of diverse users, with particular attention to at-risk populations. Devriş has gained international research and study experience across Spain, Türkiye, the United States, Belgium, the United Kingdom, and Canada. He completed his M.Sc. at Koç University and held research visits or positions at UC Irvine, KU Leuven, University College London, and Concordia University. He has also contributed to European research initiatives such as DataBri-X and COST Action VOICES, and has been involved in academic service, mentoring, and outreach activities related to privacy, inclusion, and early-career researchers, including through EuroDoc.

Dr. Diego MADARIAGA

Post-Doc Researcher

Research: Machine Learning for Networking; Data Science; Network Measurements

Personal Site

Short Bio

Diego Madariaga is a postdoctoral researcher at IMDEA Networks Institute, in the Network Data Science (NDS) group. He received his PhD in Computer Science from the University of Chile in 2023. During his PhD, he carried out substantial research grounded on traffic measurements and the realization of experimental platforms for anticipatory networking, mainly focusing on topics related to network protocols and network monitoring. Currently, his research focuses on the analysis, characterization, and modeling of mobile network traffic.

Dr. Orlando E. MARTÍNEZ-DURIVE

Post-Doc Researcher

Research: Network measurements; Routing; Energy saving in mobile networks; Network failures and root cause analysis

Personal Site

Short Bio

Orlando is a Postdoctoral Fellow in the Networks Data Science Group at IMDEA Networks Institute and a Senior Machine Learning Researcher at NetAI. During his PhD in Telematics Engineering at Carlos III University of Madrid, he studied how to understand Societal Phenomena and optimize network operations by leveraging Mobile Network Metadata. Additionally, he has carried out internships and visiting periods in industry and academia. At Cisco ThousandEyes, he worked on BGP configurations and their impact; at Telefónica Innovación Digital, on measuring the impact of energy-saving policies; and at Northeastern University, on political orientation through the lens of mobile apps.

Dr. Farzam NOSRATI

Post-Doc Researcher

Research: quantum information theory; quantum computing; quantum optics; quantum network
Personal Site

Short Bio

Farzam Nosrati is a postdoctoral researcher at IMDEA Networks Institute in Madrid, Spain. He earned his double Ph.D. in 2023 from the University of Palermo in (Italy) and INRS (Canada). His research spans quantum algorithms, indistinguishability in quantum networks, photonic processors, and quantum optimization. He has co-authored 19 papers in top-tier journals, including Nature Photonics and NPJ Quantum Information, and frequently reviews for leading publishers. His current work explores quantum secure quantum communications and distributed quantum computing.

Dr. Timothy OTIM

Post-Doc Researcher

Research: Positioning and navigation systems; mobile communications; channel modelling; transportation research; statistical modelling
Personal Site

Short Bio

Dr. Timothy Otim is a postdoctoral researcher specializing in wireless communication. He earned his PhD in Positioning and Navigation Systems from Universidad de Deusto, Spain, in 2020, with a focus on the impact of the human body on ultrawideband indoor positioning systems. Prior to his current role, he held a postdoctoral position at the German Aerospace Centre (DLR) in Wessling, Germany, in 2021, where he worked on statistical models for Intelligent Transport Systems.
At IMDEA Networks, Dr. Otim contributes to the Pervasive Wireless Systems Group, participating in projects such as the EU-ENABLE-6G, which investigates AI, privacy, and network efficiency for next-generation wireless systems, and the EUSPA project, which aims to develop a unified hybrid user terminal supporting both 5G Terrestrial Networks (TN) and Non-Terrestrial Network (NTN) communications. His recent publications cover 5G positioning, privacy in 5G standalone networks, and COVID-19 contact tracing through multipath profile similarity.

Dr. Juan Marcos RAMIREZ

Post-Doc Researcher

Research: Interpretable Models; Machine Learning; Mobile Networks
Personal Site

Short Bio

Juan Marcos Ramírez Rondón received the B.S. diploma in electrical engineering, the Master's degree in biomedical engineering, and the Doctor's degree in applied sciences at the Universidad de Los Andes (ULA), Mérida, Venezuela, in 2002, 2007, and 2017, respectively. In 2004, he joined as a teaching and research staff of the Electrical Engineering Department at ULA, Venezuela. He worked as a postdoctoral intern at the High Dimensional Signal Processing (HDSP) Group, Universidad Industrial de Santander, Colombia (2017-2019). He also worked as Marie Curie Postoctoral fellow at the Universidad Rey Juan Carlos (2017-2019). Currently, he is working as a Postdoctoral Researcher at IMDEA Networks Institute.

Dr. Giuseppe SANTAROMITA

Post-Doc Researcher

Research: Wireless Networks; 5G; Localization
Personal Site

Short Bio

Dr. Giuseppe Santaromita joined the Pervasive Wireless Systems Group led by Dr. Domenico Giustiniano at IMDEA Networks in May 2020. He received his Ph.D. in Information and Communication Technologies at the University of Palermo (Italy), with a focus on physical layer flexibility to improve the performance of high-capacity and ultra-dense wireless networks. He is a member of IEEE and ACM. His main research interest at IMDEA involves low latency-high accuracy localization methods for wireless networks, and the implementation of an experimental 5G New Radio framework based on the popular opensource software OpenAirInterface and able to collect useful measurements for positioning.

Dr. Luca SANTORO

Post-Doc Researcher

Research: Autonomous Robotics; UAV Systems; Real-Time Estimation and Control; Indoor Localization; Visible Light Communication (VLC)
Personal Site

Short Bio

Luca Santoro received the M.S. degree in Electronics and Robotics Engineering in 2020 and the Ph.D. degree in Materials, Mechatronics, and Systems Engineering in 2024 from the University of Trento. His research interests include autonomous UAVs and wheeled mobile robots, distributed and real-time estimation and control, localization, and clock synchronization algorithms. He was a Researcher at Fraunhofer Italia Research within the Automation and Mechatronics Engineering team, where he contributed to the LUNA Project on autonomous robotic transport systems for Industry 4.0 applications. Since 2025, he has been a Postdoctoral Researcher at IMDEA Networks Institute, where his research focuses on autonomous drone systems, indoor localization for resource-constrained platforms, and the integration of visible light communication technologies in mobile robotic systems.

Dr. Syed WAQAS HAIDER SHAH

Post-Doc Researcher

Research: 5G and beyond cellular networks; device-to-device communication; reconfigurable intelligent surfaces; analytical analysis of mobile networks; quality-of-service provisioning
Personal Site

Short Bio

Syed is a Marie Skłodowska-Curie Actions postdoctoral fellow at IMDEA Networks, Madrid, Spain. He joined the Wireless Networking Group in September 2022. He received a master's degree in electrical engineering from the National University of Science and Technology, Islamabad, Pakistan in 2016, and a Ph.D. degree in electrical engineering from Information Technology University, Lahore, Pakistan in 2021. From 2019 to 2021, he was a split-site Ph.D. Scholar with the Computer Laboratory, Department of Computer Science and Technology, University of Cambridge, UK, where he worked under the supervision of Prof. Jon Crowcroft. He has published in highly reputed venues, such as IEEE INFOCOM, IEEE ICC, IEEE Wireless Communication Letters, IEEE Transactions on Vehicular Technology, IEEE Transactions on Green Communication and Networking, Elsevier Computer Networks, and Transactions on Emerging Telecommunication Technologies. He is also a reviewer of many international journals and conferences.

visiting professors/researchers

Visiting Professors share our research interests and spend their sabbatical with us for either one or two terms. They usually have several years' post-doctoral research experience and are interested in extending their horizons with a temporary assignment in a new environment.

IMDEA Networks also hosts Visiting Researchers who collaborate with our research groups for short stays. These researchers contribute to ongoing projects and bring complementary expertise, fostering collaboration and knowledge exchange within the institute.

Stefan BIA
University of origin: Technical University of Cluj-Napoca

Jacob BRADSHAW
University of origin: University of North Texas

Alexis CARRE
University of origin: École Normale Supérieure de Lyon

Ziyu FAN
University of origin: University of Durham

Sayem KAMAL
University of origin: Columbia University

Antonio ORTEGA
University of origin: University of Southern California

Ahsan SALEEM
University of origin: University of Jyväskylä

Jorge Ignacio VALENZUELA CARRASCO
University of origin: Univerisdad de Chile

Jingyun WANG
University of origin: Durham University

pre-doc researchers

Our PhD Students are young, aspiring researchers who occupy a salaried position in our research team whilst undertaking their Ph.D. at a leading Madrid University for up to five years. Most of these pre-doc researchers enter the Ph.D. program at University Carlos III of Madrid (UC3M). IMDEA Networks Institute has a far-reaching collaboration agreement with UC3M, which includes the provision of a Postgraduate program for our early-stage researchers. In the future, we may have similar arrangements with other Madrid Universities.

IMDEA Networks research team of postdocs, pre-doctoral researchers, engineers and internship students

Ghina AL ATAT
Pre-Doc Researcher

BSc: Physics with minors in Mathematics, Computer Science, and Computational Science - American University of Beirut (AUB). Beirut, Lebanon.
MSc: Computational Science – AUB. Beirut, Lebanon.
Previous Position: Research Assistant at Suliman S. Olayan School of Business, AUB, Beirut, Lebanon. Teaching Assistant at Physics Department, AUB, Beirut, Lebanon.
Research: Learning at the Edge; Edge Computing; Edge Intelligence; Design of Algorithms; Decision Making

Vinuri BANDARA
Pre-Doc Researcher

BSc: Information Systems - University of Colombo. Sri Lanka
MSc: Software and Systems - Universidad Politécnica de Madrid (UPM). Madrid, Spain
Previous Position: Research Engineer, Score Lab, Sri Lanka
Research: Android Privacy and Security; Network security

Iñaki BRAVO
Pre-Doc Researcher

BSc: Aerospace Engineering - Polytechnic University of Madrid. Madrid, Spain
MSc: Applied and Computational Mathematics – University Carlos III of Madrid. Madrid, Spain
Research: Explainable AI; Wireless Sensing

Beyza BÜTÜN
Pre-Doc Researcher

BSc: Computer Engineering - Middle East Technical University. Ankara, Turkey
MSc: Computer Engineering - Middle East Technical University. Ankara, Turkey
Research: Machine Learning, Programmable Networks, Sustainable Network Intelligence, Energy Consumption Measurements and Optimization

Salvatore CORALLO
Pre-Doc Researcher

BSc: Electronics Engineering - University of Palermo. Palermo, Italy
MSc: Electronics Engineering - Telecommunications - University of Palermo. Palermo, Italy
Research: Embedded AI; Smart Farming; Battery-Free IoT

Alejandro Tjaarda DE COCK
Pre-Doc Researcher

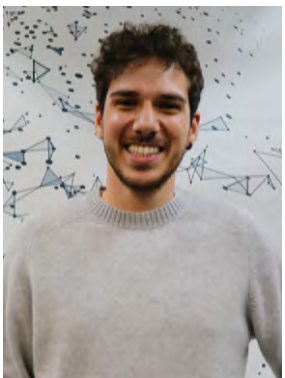
BSc: Telecommunications, specialization in Sound and Image – University Carlos III of Madrid. Madrid, Spain
MSc: Internet of Things – University Carlos III of Madrid. Madrid, Spain
Research: Quantum communications networks and network virtualization

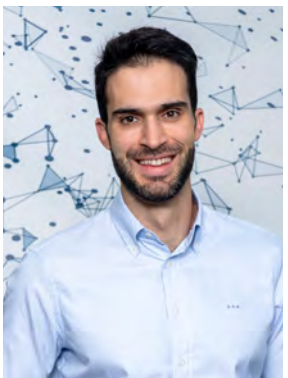
Ada D'IORIO
Pre-Doc Researcher

BSc: Physics - University of Naples Federico II. Naples, Italy
MSc: Physics of Data - University of Padua. Padua, Italy
Research: Data traffic analysis

David DE ANDRÉS HERNÁNDEZ
Pre-Doc Researcher

BSc: Telecommunication Technologies and Services - Universidad Politécnica de Madrid. Madrid, Spain
MSc: Electrical Engineering and Information Technology - Technical University of Munich. Munich, Germany
Previous Position: Working Student at DE-CIX R&D | Systems Engineer at Juniper Networks
Research: Machine Learning, Programmable Networks





Freddy DEL ÁNGEL ARRIETA

Pre-Doc Researcher

BSc: Electronic Instrumentation Engineering - Universidad Veracruzana. Xalapa, Veracruz, Mexico
MSc: Biomedical Siences and Technologies - National Institute of Astrophysics, Optics, and Electronics (INAOE). Santa Maria Tonanzintla, Mexico
Research: Visible light communication (VLC); LiFi systems

Abhishek DUTTAGUPTA

Pre-Doc Researcher

BSc: Tech - KIIT University. India
MSc: Electronics Information Engineering - Trinity College Dublin. Dublin, Ireland
Previous Position: Industrial Automation Engineer at Voltas Limited, UAE
Research: Reinforcement Learning; Explainable AI

Ángela DÍAZ-BRICIO

Pre-Doc Researcher

BSc: Physics and Mathematics – University Carlos III of Madrid. Madrid, Spain
MSc: Quantum Technlogies and Engineering - University Carlos III of Madrid. Madrid, Spain
Research: Quantum Key Distribution; Quantum networks; Quantum security

Sergio DÍAZ ARANDA

Pre-Doc Researcher

BSc: Mathematics – Complutense University. Madrid, Spain
MSc: Mathematics – Complutense University. Madrid, Spain
MSc: Statistical-Computational Treatment of Information – Complutense University. Madrid, Spain
Previous position: Research Assistant at the UC3M-Santander Big Data Institute, Madrid, Spain
Research: social networks; statistics; data science; discrete mathematics

Andrea FRESA

Pre-Doc Researcher

BSc: Computer Engineering - University Federico II. Naples, Italy
MSc: Computer Engineering - University Federico II. Naples, Italy
Previous Position: Master Thesis Worker. Ericsson Research. Jorvas, Finland
Research: Edge Computing; Edge Intelligence; Design of Algorithms; IoT

Carlos FAJARDO

Pre-Doc Researcher

BSc: Physics – University of Granada. Spain
MSc: Quantum physics and Quantum Technologies - UIMP
Research: Quantum graphs and Measures of Entanglement in multipartite systems

Alexandr GOULTIAEV TOLSTOKOROV

Pre-Doc Researcher

BSc: Electronic Engineering - Trinity College Dublin. Dublin, Ireland
MSc: Electronic Engineering - Trinity College Dublin. Dublin, Ireland
Research: LLM Fingerprinting; Watermarking; Private Information Retrieval; Data Valuation; Data Economy

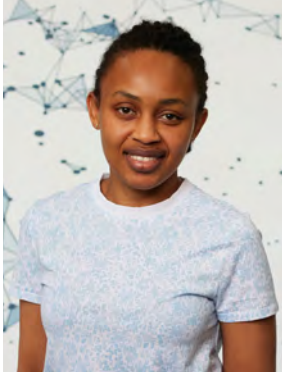
Behafarid HEMMATPOUR

Pre-Doc Researcher

BSc: Physics - Ferdowsi University of Mashhad. Mashhad, Iran
MSc: Statistical Physics and Complex Systems - Shiraz University. Shiraz, Iran
Research: Machine Learning; Intelligent Transportation; Spatiotemporal Data; Smart Cities; Computational Epidemiology

Sara IBÁÑEZ
Pre-Doc Researcher

BSc: Telecommunication Technologies and Services Engineering - Universidad de Zaragoza. Zaragoza, Spain
MSc: Telecommunications Engineering - Universidad de Zaragoza. Zaragoza, Spain
Research: Mobile network traffic; Network measurement; Traffic analysis



Rita INGABIRE
Pre-Doc Researcher

BSc: Electrical Engineering - Makerere University. Kampala, Uganda
MSc: Information Systems - Makerere University. Kampala, Uganda
Previous Position: Senior Engineer. MTN Uganda
Research: Interpretable machine learning; Edge/Cloud design; Intelligent Network design

Chen JAMINON-DE ROECK
Pre-Doc Researcher

BSc: Science in Engineering - Ecole polytechnique de Louvain, Universite Catholique de Louvain-La-Neuve. Belgium
MSc: Science in Electronics and Electrical Engineering - Ecole polytechnique de Louvain, Universite Catholique de Louvain-La-Neuve. Belgium
Research: 5G; telecommunications, LEO (Low Earth Orbit) satellites; Non-Terrestrial Networks; Doppler effects; Blind Initial access receiver; OpenAirInterface

Arivarasan KARMEGAM
Pre-Doc Researcher

BSc: Computer Science and Engineering - Ramco Institute of Technology. Rajapalayam, India
MSc: Computer Science and Engineering - Indian Institute of Technology (Indian School of Mines). Dhanbad, India
Research: Blockchain and Distributed Ledger Technology

Masoumeh KHODARAHMI
Pre-Doc Researcher

BSc: Computer Engineering - Software - Shiraz University. Shiraz, Iran
MSc: Computer Engineering - Computer Systems Architecture - University of Tehran. Tehran, Iran
Research: Immersive video streaming; Quality of Experience

Stefano KRON
Pre-Doc Researcher

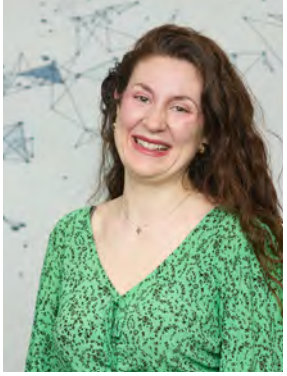
BSc: Computer Engineering - Software - Shiraz University. Shiraz, Iran
MSc: Computer Engineering - Computer Systems Architecture - University of Tehran. Tehran, Iran
Research: On-Device Continual Learning; TinyML; Embedded AI; Signal Processing; RF Sensing; Wearable Devices; IoT; Health Monitoring; Human-Machine Interaction; Contextual Intelligence; Adaptive Systems; Smart Sensing Systems

Aninda LAHIRI
Pre-Doc Researcher

BSc: Physics - Mumbai University. India
MSc: Quantum Science and Technology - Trinity College Dublin, Ireland
Research: Quantum Tensor Networks; Quantum Machine Learning

Naicheng LI
Pre-Doc Researcher

BSc: Optoelectronic Information Science and Technology - Nanjing University of Science and Technology. China
MSc: Computer Systems and Networks - Chalmers University of Technology. Sweden
Research: Federal Learning; Privacy Preserving



Blanca LÓPEZ
Pre-Doc Researcher

BSc: Physics - University of Seville. Seville, Spain
MSc: Physics and Mathematics – University of Granada. Granada, Spain
Research: Quantum communications

Louis MIERMONT
Pre-Doc Researcher

MSc: ESIEA - Graduate School of Engineering, France
Research: Cybersecurity, Machine Learning, AI

Mariella MISCHINGER
Pre-Doc Researcher

BSc: Computer Science - Technical University of Munich. Munich, Germany
MSc: Computer Science - Technical University of Munich. Munich, Germany
Previous position: IT Product Owner / Project Manager at Unternehmer-TUM GmbH, Munich, Germany
Research: Cybersecurity, Artificial Intelligence, Adversarial Machine Learning

Reza NAMVAR
Pre-Doc Researcher

BSc: Computer Engineering - Shiraz Branch of Azad University. Shiraz, Iran
MSc: Computer Engineering - Software - Shiraz University. Shiraz, Iran
Research: Wireless Communication; Mobile Networks; Large Language Models

Bei OUYANG
Pre-Doc Researcher

BSc: Electrical and Information Engineering - Beijing Institute of Technology. Beijing, China
MSc: Electrical and Computer Engineering - Rice University. Houston, United States
Previous Position: Research Intern, Microsoft Research Asia, Shanghai, China
Research: Integrated Sensing and Communication; mmwave; wireless systems

Francesco PIGATO
Pre-Doc Researcher

BSc: Electronic Engineering - University of Padova. Padova, Italy
MSc: Telecommunication Engineering - Politecnico di Milano. Milano, Italy
Research: Localization techniques; signal processing for sensing applications

Máximo PIRRI
Pre-Doc Researcher

BSc: Communications Systems Engineer - Facultad de Ingeniería, Universidad de la República. Montevideo, Uruguay
Previous Position: Research and teacher assistant - Instituto de Ingeniería Eléctrica, Facultad de Ingeniería, Universidad de la República.
Research: Data Science; Mobile traffic analysis

Anna POLYANSKAYA
Pre-Doc Researcher

BSc: Fundamental and Applied Linguistics - National Research University Higher School of Economics. Moscow, Russia
MSc: Language Analysis and Processing - University of the Basque Country. Donostia-San Sebastian, Spain
Research: Data Science, Machine learning, NLP, Deep Learning

Alfonso RODRÍGUEZ
Pre-Doc Researcher

BSc: Computer Science and Engineering - Carlos III University. Madrid, Spain
MSc: Informatics Engineering - Carlos III University. Madrid, Spain
MSc: Cybersecurity - Carlos III University. Madrid, Spain
Research: Metaverse, Security & Privacy, Reversing XR/VR Applications

Romina RODRÍGUEZ
Pre-Doc Researcher

BSc: Maths - National University of Cordoba. Cordoba, Argentina
MSc: Machine Learning – National University of Cordoba. Cordoba, Argentina
Research: Machine learning; WiFi sensing; human mobility; occupancy estimation; smart campus; energy efficiency; HVAC optimization; emergency response

Oriol SAGUILLO
Pre-Doc Researcher

BSc: Computer Science - University of Barcelona. Barcelona
MSc: Applied Mathematics - Polytechnic University of Catalonia and EPFL. Barcelona and Switzerland
Previous position: Decentralized Finance Researcher at Nethermind, London
Research: Metaverse, Security & Privacy, Reversing XR/VR Applications

Pablo SAUCEDO DE MIGUEL
Pre-Doc Researcher

BSc: Computer Engineering - Autonomous University. Madrid, Spain
MSc: Internet of Things - Politechnic University. Madrid, Spain
Research: TinyML, Distributed Computing, Integrated Sensing and Communications, mmWave

Salil SHARMA
Pre-Doc Researcher

BSc: Electronics & Communications Engineering - Rajasthan Technical University. Kota, India
MSc: Communication Systems Design - Indian Institute of Information Technology, Design & Manufacturing, Kancheepuram. Chennai, India
MSc: Mobile Computing Systems - Eurecom. Sophia Antipolis, France
Research: Integrated Sensing and Communication; Signal Processing Algorithms; mm-wave

Islomjon SHUKHRATOV
Pre-Doc Researcher

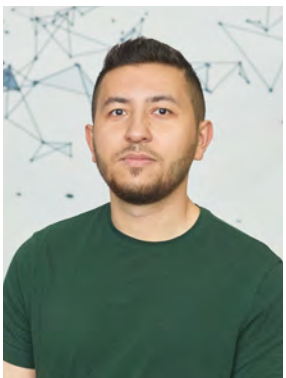
BSc: Computer Science and Engineering - Inha University. Incheon, South Korea
MSc: Internet of Things and Wireless Technologies - Skoltech
Research: computer vision; 3D objects; large language models; deep learning

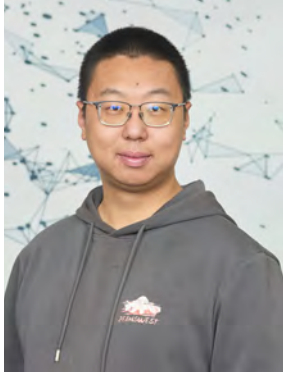
Michele SIMEONE
Pre-Doc Researcher

BSc: Computer and Automatic Engineering - Sapienza. Rome, Italy
MSc: Computer Science and Engineering - Polytechnic of Milan. Milan, Italy
Research: Machine Learning; Safe Learning; Heterogeneous Networks

Javier TALAVANTE
Pre-Doc Researcher

BSc: Audiovisual Systems Engineering - University Carlos III of Madrid. Madrid, Spain
MSc: Telecommunication Engineering - University Carlos III of Madrid. Madrid, Spain
Previous Position: Research assistant. Infrared Lab UC3M. Madrid, Spain
Research: Visible Light Communication (VLC), LiFi systems, VLC backscatter, Battery-free IoT devices





Junlang WANG

Pre-Doc Researcher

BSc: Information Security - Xi'an University of Posts and Telecommunications, China
MSc: Computer Systems and Networks - Chalmers University of Technology, Sweden
Research: Distributed system

Ruben Thilo Severin WENDT

Pre-Doc Researcher

BSc: Electrical Engineering and Information Technology - Technische Hochschule Nürnberg. Nuremberg, Germany
MSc: Applied Research in Engineering Sciences - Technische Hochschule Nürnberg. Nuremberg, Germany
Previous position: Software Developer at Zeiss SMT
Research: Loss-Meta Learning for Mobile Traffic Forecasting

Nipuna WEERASEKARA

Pre-Doc Researcher

BSc: Information Systems (Honors) - University of Colombo. Colombo, Sri Lanka
MSc: Sofware and Systems - Universidad Politécnica de Madrid (UPM). Madrid, Spain
Research: Android Privacy and Security; Network security

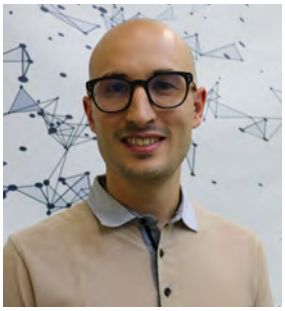
Tongyun YANG

Pre-Doc Researcher

BSc: Electrical Engineering - SMU.
MSc: TU Delft, Computer and Embedded Systems Engineering – TU Delft. The Netherlands
Research: Pervasive sensing with wireless signals

external PhD students

Our External PhD Students are young, aspiring researchers who are supervised or co-supervised by a member of the IMDEA Networks' research team. Most of the External PhD Students to IMDEA Networks are undertaking the Ph.D. program at University Carlos III of Madrid (UC3M).



Miguel Ángel BERMEJO

Pre-Doc Researcher

BSc: Telecommunications Engineering - Universidad Politécnica de Madrid (UPM). Madrid, Spain
MSc: Data Science - Universitat Oberta de Catalunya (UOC). Barcelona, Spain
Previous Position: Telecommunications Engineer. Lisbon, Portugal
Research: Online advertising; Internet measurements; Data Analytics; Machine Learning

Serly MOGHADAS GOLIAN

Pre-Doc Researcher

BSc: Electrical and Electronics Engineering – Urmia University of Technology (Urmia, Iran)
MSc: Communications Systems Engineering – Urmia University (Urmia, Iran)
Research: Explainable AI, Machine Learning, Mobile Networks

Sai Pavan DERAM

Pre-Doc Researcher

BSc: Electronics and communications engineering - SASTRA University. India
MSc: Communication and signal processing - TU Ilmenau, Germany
Previous position: Research Assistant. Communications Reseach Laboratory, TU Ilmenau, Germany
Research: mmWave communications, Physical layer signal processing, parameter estimation techniques

Antonio RUSSO

External PhD Student

BSc: Computer Science Engineering. Università degli Studi di Napoli Federico II. Naples. Italy
MSc: Computer Science Engineering. Università degli Studi di Napoli Federico II. Naples. Italy
Previous Position: Teaching Assistant. Cybersecurity Academy (Università di Napoli Federico II). Naples. Italy
Research: blockchain; applied cryptography; network security; distributed systems

Lucía UGUINA

External PhD Student

BSc: Telecommunication Technologies Engineering - University Carlos III of Madrid. Madrid, Spain
MSc: Computer Science and Mathematics - Universitat Rovira i Vigili / Universitat Oberta de Catalunya. Tarragona, Spain
Previous Position: Junior Assistant. Management Solutions. Madrid. Spain
Research: Learning Analytics; Data Mining; Real-Time Data

research engineering and support

The Research Engineering & Support unit at IMDEA Networks is dedicated to supporting the continued growth in our research capacity and maximizing the impact of our research output by providing specific technical and professional expertise and assistance to ongoing research endeavors in a variety of ways. Research Engineering & Support personnel work either at the level of the entire Institute, or closely with researchers and their groups. There are roles with an engineering background that take care of the design, installation and maintenance of the IT infrastructure. Other roles may, for instance, provide administrative or operational support to project or lab management.

Typical jobs include systems administration, research (software and/or hardware) engineering, project or research administrator and laboratory technician. These positions are similar to their industry equivalents. They enable our employees to work on cutting-edge research problems and technology in a stimulating and innovative environment.

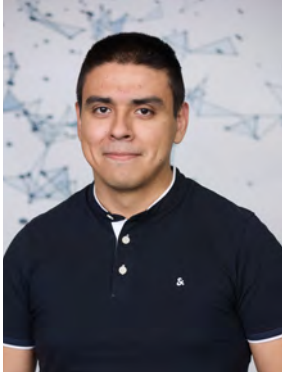
Admin and research support team

Josué Miguel AGUILAR
Research Engineer

BSc: Electric Engineering - Technological University of Havana. Havana, Cuba
Research: High Performance Computing; Programmable Networks; Network Energy Consumption

Daniel Alejandro AMARO
System Administrator

BSc: Computer Science – University of Habana – Cuba
Research: Anomaly detection; Data Analysis



Diego BENITO
Research Engineer

BSc: Computer Science – University of Alcalá de Henares. Madrid, Spain
MSc: Data Analysis and Big Data - University of Alcalá de Henares. Madrid, Spain
Research: Data Analysis; Explainability Analysis; Machine Learning

Ignacio BERBERANA
Senior Research Engineer

MSc: Mining Engineer. School of Mining Engineering - Polytechnic University of Madrid. Madrid, Spain
Research: 5G; Radio Communications; RAN Virtualization

Celia CABELLO
Research Engineer

BSc: Psychology - UNED
MSc: Advanced Studies in Brain and Behavior – University of Seville
Research: Biometric SDKs. Cybersecurity & Internet Analytics

Nicolás BORRAJO
Research Engineer

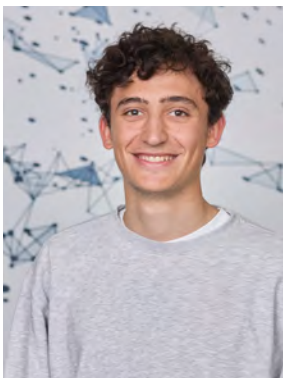
BSc: Computer Science and Engineering - Universidad Carlos III de Madrid. Madrid, Spain
Research: Quantum computing

Elvira CONTI
Project Manager

BSc: International Relationships - Rey Juan Carlos University. Madrid, Spain
MSc: Business Innovation and Project Management - Mondragon University. Basque country. Spain

Paula DE DIOS
Project Administrator

BSc: Journalism. Complutense University of Madrid (UCM). Madrid, Spain
MSc: European Political and Social Integration. Vrije Universiteit Brussel. Belgium
MSc: Feminism and Gender Complutense University of Madrid (UCM). Madrid, Spain



Gonzalo DÍAZ
Research Engineer

BSc: Bioinformatics - University of San Jorge. Zaragoza, Spain.
MSc: Bioinformatics applied to personalized medicine and health - **Instituto de Salud Carlos III (ISCIII). Madrid, Spain**

Dr. Stavros ELEFTHERAKIS
Research Engineer

BSc: Mathematics - University of Crete. Heraklion, Greece
MSc: Applied and Computational Mathematics - University of Crete. Heraklion, Greece
MSc: Telecommunications Engineering – University Carlos III of Madrid. Madrid, Spain
PhD: Telematics Engineering - Universidad Carlos III de Madrid (UC3M). Madrid, Spain
Research: 5G Localization, Wireless Sensing, Artificial Intelligence, Network Privacy, Applied Mathematics

Pablo FERNÁNDEZ
Research Engineer

BSc: Mining Engineering - Polytechnic University of Madrid. Madrid, Spain
MSc: Mining Engineering - Polytechnic University of Madrid. Madrid, Spain
Research: AI, Machine Learning, Deep Learning, Explainable AI

Alfonso GARCÍA VELO
Research Engineer

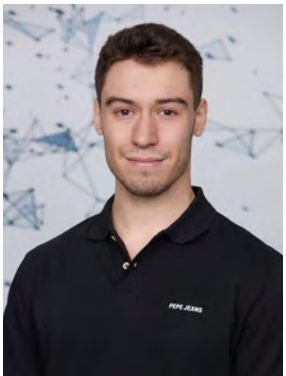
BSc: Engineering Physics (Physics) – Universidad Carlos III of Madrid. Madrid, Spain
MSc: Master in Quantum Technologies and Engineering (Physics) - Universidad Carlos III of Madrid. Madrid, Spain

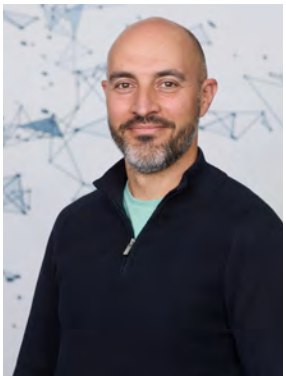
Fernando GONZÁLEZ
Research Engineer

BSc: Electronics engineering - Instituto Tecnológico De Durango, Mexico
Research: OWC; VLC; LiFi; Embedded systems

Neftalí GONZÁLEZ
Systems Administrator

BSc: IT Systems Engineer. Universidad Rey Juan Carlos. Móstoles. Spain





Susana HERNÁNDEZ
Project Administrator

MSc: Biology (Specialization: Biotechnology) - EQF Level 7 Certificate (Master). Complutense University of Madrid. Madrid. Spain
MSc: Food Science and Technology - EQF Level 7 Certificate. Complutense University of Madrid. Madrid. Spain

Francisco Javier HERVÁS
Project Administrator

BSc: Business Administration - Universidad Autónoma de Madrid. Madrid, Spain
MSc: Management of Human Resources - Universidad Autónoma de Madrid. Madrid, Spain

MohammadErfan JABBARI
Research Engineer

BSc: Electrical Engineering (Telecom) - University of Tehran. Tehran, Iran

Nirlay KUNDU
Research Engineer

BSc: Electrical Engineering, Jadavpur University, Calcutta, India
MSc: Design Engineering, Leicester University, Leicester, UK, British Commonwealth Scholarship Indian Institute of Technology, Kharagpur
MBA, Babson College, Wellesley, MA, USA
Research: Next generation telecom technologies

Daniel LORENZO
Research Engineer

BSc: Telematics Engineering – University Carlos III of Madrid. Madrid, Spain
Research: 5G Platform; O-RAN; Open Air Interface; Radio Access Network (RAN)

José Pedro MARTÍN YUBERO
Research Engineer

BSc: Telecommunications Engineering – University Carlos III of Madrid. Madrid, Spain
MSc: Quantum technologies and engineering – University Carlos III of Madrid. Madrid, Spain
Research: Quantum Internet

Beatriz MARTÍN
Project Administrator

BSc: Law – Rey Juan Carlos University. Madrid, Spain
MSc: Training of Secondary Education, High School, Vocational Training and Language Teachers – Rey Juan Carlos University. Madrid, Spain

Andrés MARTÍN
Research Engineer

BSc: Physics & Mathematics – University of Zaragoza. Spain
MSc: Quantum Technologies and Engineering – University Carlos III of Madrid
Research: Quantum cryptography; Quantum Internet; network security

Pablo MARTÍNEZ FREILE
Project Administrator

BSc: Political Sciences and Public Administration - University of Salamanca. Salamanca, Spain
MSc: International Master in Contemporary Latin American Studies - Complutense University of Madrid. Madrid, Spain

Iván MELIJOSA
Research Engineer

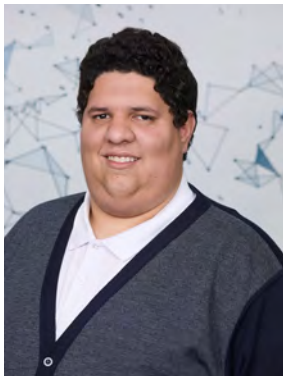
BSc: Telematics Engineering - Universidad Carlos III de Madrid. Madrid, Spain
MSc: Quantum Technologies and Engineering – Universidad Carlos III de Madrid. Madrid, Spain

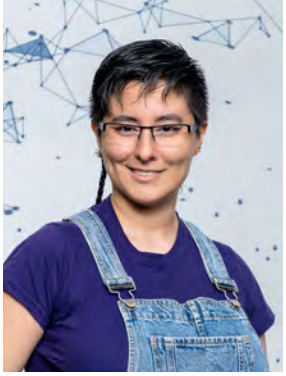
José Manuel PANDELO
Research Engineer

BSc: Law – Pontificia Universidad Católica Madre y Maestra – Dominican Republic
MSc: Digital Business – Spain Business School and UCAM Murcia

Javier PÉREZ
Research Engineer

BSc: Telematics Engineering – University Carlos III of Madrid. Madrid, Spain





Rosalinda QUINTANILLA
Project Administrator

BSc: Law – Universidad de Monterrey. Mexico
MSc: Sports Law – Escuela Universitaria Real Madrid - Universidad Europea. Madrid, Spain

Rafael RUIZ
Systems Administrator

BSc: Industrial Electronics and Automation Engineering - Universidad Politécnica de Cartagena. Murcia, Spain
MSc: Industrial Electronics - Universidad Politécnica de Madrid. Madrid, Spain

Rubén RUPÉREZ
Program Manager

BSc: Industrial Technology Engineering - University Carlos III of Madrid. Madrid, Spain
MSc: Industrial Engineering - University Carlos III of Madrid. Madrid, Spain

Anthony SÁNCHEZ
Research Engineer

BSc: Electrical Engineer Universidad de los Andes Mérida - Venezuela
Research: Software Defined Radio (SDR); millimeter wave; Integrated Sensing and Communication (ISAC); MIMO and beamforming.

internship students and visiting PhD students

IMDEA Networks offers a Research Internship program. Eligible candidates are students who are currently undertaking a B.Sc., M.Sc. or equivalent in Computer Science, Electrical Engineering, Computer Engineering, Telecommunications, Telematics or a related field, and who wish to enhance their research potential developing the Science of Networks. Interns work closely with members of our research team, which allows them to acquire on-the-job training and gain valuable experience in computer networking science and technology.

The minimum expected internship duration is usually 3 months, but longer stays are accommodated depending on individual circumstances. Successful interns also receive a special consideration for future positions on our PhD Student team.

In addition, we have a program in place for Visiting PhD Students from partner universities or research organizations to undertake an internship at IMDEA Networks under the direction of one of our faculty members. This program enables them to develop new skills and gain expertise in an enriching new environment.

Enrico BOFFETTI
University of origin: Politecnico di Bari

Alexander BONORA
University of origin: University of Padova

Lucas Airam CASTRO DE SOUZA
University of origin: Universidade Federal do Rio de Janeiro (UFRJ)

Mariana CUNHA
University of origin: University of Coimbra

Melanny Cecibel DAVILA PAZMIÑO
University of origin: Politecnico di Milano

David DEL RÍO
University of origin: Universitat Oberta Catalunya (UOC)

Lubin DU CHEN
University of origin: Universidad Carlos III de Madrid (Madrid, Spain)

Victoria DURAN
University of origin: Yale University

Genoveva GARCÍA
University of origin: Universidad Carlos III de Madrid (Madrid, Spain)

Fabio GIACOMELLI
University of origin: University of Rome Tor Vergata

Giuliana GALASSI
University of origin: Universidad Carlos III de Madrid (Madrid, Spain)

Vincenzo GENTILE
University of origin: University of Palermo (Italy)

Jon LEJARDI
University of origin: Universidad Pública de Navarra

Mobina MAHDAVI
University of origin: Politecnico di Milano

Natalie MOLINA
University of origin: HE BRIDGE | Digital Talent Accelerator (Madrid, Spain)

Marcello MORINI
University of origin: Politecnico di Milano

Marcos PÉREZ
University of origin: Universidad Carlos III de Madrid (Madrid, Spain)

Helena PINILLA
University of origin: Universidad Carlos III de Madrid (Madrid, Spain)

Mattgia Giovanni POLISANO
University of origin: Politecnico di Milano

Isabella QUINTERO
University of origin: Universidad Carlos III de Madrid (Madrid, Spain)

Quentin RABAN
University of origin: TELECOM Saint-Etienne

Sreejith RAMAKRISHNAN
University of origin: University of Calicut (India)

Javier RODRÍGUEZ FONTIVEROS
University of origin: Universidad de Sevilla (Spain)

Favier Alejandro ROJAS
University of origin: Universidad Carlos III de Madrid (Madrid, Spain)

Iker ROSALES
University of origin: Universidad Carlos III de Madrid (Madrid, Spain)

Marta SIERRA
University of origin: Universidad Carlos III de Madrid (Madrid, Spain)

Syed Asrar UL HAQ
University of origin: IIIT Delhi

administrative unit

Ramón GIRONA
General Manager

Qualifications: BSc: Computer Science. Universidad de las Palmas de Gran Canaria (ULPGC). Canary Islands. Spain; Industrial Engineering. Universidad Politécnica de Canarias (UPC). Canary Islands. Spain; MBA: Instituto Universitario de Empresa. Madrid. Spain

Marta DORADO
Operations & Communications Manager

Qualifications: BSc: Dual Bachelor's degree in Journalism and Audiovisual Communication - University Carlos III of Madrid (UC3M). Madrid, Spain. MSc: Journalism and Digital Communication ABC - Complutense University of Madrid (UCM). Madrid, Spain

Brian DUNNE
Senior Human Resources Manager

Qualifications: BBS in Business Studies and French - Trinity College Dublin. Ireland

Ana GONZÁLEZ
Senior Projects & Funding Manager

Qualifications: BA (Hons) "Modern European Studies". University of West London. UK; Postgraduate Diploma in "European Studies". University of West London. UK

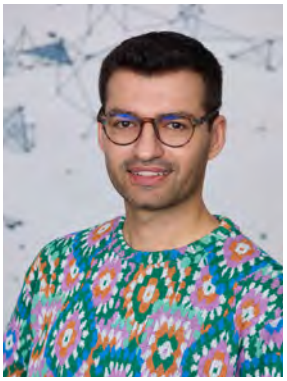
Pilar SÁEZ
HR Administration Manager

Qualifications: Labour Relations. Complutense University of Madrid. Madrid. Spain; Postgraduate Diploma in "Executive Compensation and Benefits". Centro de Estudios Garrigues. Madrid. Spain

alumni network

The Institute's Alumni Network is built upon graduate PhD Students who have obtained their Ph.D. and have left the team to further their research career in other organizations. Networking is about making contacts and building relationships. The alumni frame provides its members a supportive community of graduates who have shared experiences, values and goals that will last a lifetime. It also provides a venue through which former PhD Students can maintain a long-term collaborative relationship with the Institute. Alumni are IMDEA Networks Institute's ambassadors worldwide, creating awareness and opening up new communication channels with the global scientific community.

The members of the alumni network appear listed here following the most recent graduation date up to the end of 2025.



Dr. Devriş İŞLER

Current Position: Post-Doc Researcher at IMDEA Networks Institute. Madrid. Spain
Ph.D. Date: 1 December 2025

Dr. Nikolaos APOSTOLAKIS

Current Position: NTN Software Engineer at Software Radio Systems (SRS), Barcelona, Spain
Ph.D. Date: 31 October 2025

Dr. Amir MEHRJOO

Current Position: Post-Doc Researcher at IMDEA Networks Institute. Madrid. Spain
Ph.D. Date: 26 September 2025

Dr. Aniketh GIRISH

Current Position: Post-Doc Researcher at IMDEA Networks Institute. Madrid. Spain
Ph.D. Date: 26 September 2025

Dr. Stavros ELEFTHERAKIS

Current Position: Postdoctoral Researcher at New York University Abu Dhabi (NYUAD)
Ph.D. Date: 15 September 2025

Dr. Orlando E. MARTÍNEZ-DURIVE

Current Position: Post-Doc Researcher at IMDEA Networks Institute. Madrid. Spain
Ph.D. Date: 28 July 2025

Dr. Tianyue CHU

Current Position: Research Engineer at Telefónica Research. Madrid. Spain
Ph.D. Date: 23 July 2025

Dr. Sachit MISHRA

Current Position: Postdoctoral researcher at Inria Lyon, France
Ph.D. Date: 30 April 2025

Dr. Vahid GHAFOURI

Current Position: Post-Doc Researcher at University of Oxford. United Kingdom
Ph.D. Date: 6 March 2025

Dr. Yago LIZARRIBAR

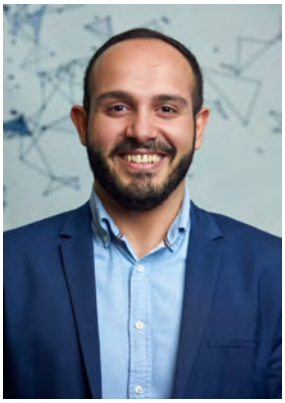
Current Position: Scientific Project Manager at CYD Campus. Switzerland
Ph.D. Date: 3 March 2025

Dr. Sergi ALCALÁ-MARÍN

Current Position: Post Doctoral Researcher at Universidad Carlos III de Madrid. Spain
Ph.D. Date: 24 February 2025

Dr. Leonardo PERONI

Current Position: Senior Engineer in Data and AI, Indra Sistemas, Madrid, Spain
Ph.D. Date: 21 February 2025



Dr. Leonardo LO SCHIAVO

Current Position: Assistant Professor at Universidad Carlos III de Madrid. Spain
Ph.D. Date: 28 January 2025

Dr. Aristide Tanyi Jong AKEM

Current Position: Lecturer in Computer Science at University of Southampton, United Kingdom
Ph.D. Date: 27 September 2024

Dr. André Felipe ZANELLA

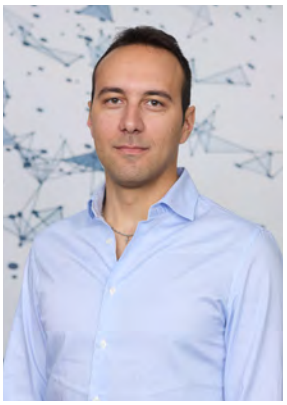
Current Position: Researcher at Telefónica. Barcelona. Spain
Ph.D. Date: 25 September 2024

Dr. Alan COLLET

Current Position: Postdoctoral fellow at CEA Paris Saclay, France
Ph.D. Date: 19 September 2024

Dr. Francesco SPINELLI
Current Position: Researcher. I2CAT. Spain
Ph.D. Date: 28 June 2024

Dr. Dayrene FRÓMETA
Current Position: Application Engineer at Rohde & Schwarz
Ph.D. Date: 28 June 2024



Dr. Alessio SCALINGI
Current Position: Assistant Professor at Universidad Carlos III de Madrid, Spain
Ph.D. Date: 18 June 2024

Dr. Nina GROSHEVA
Current Position: System Engineer at AXON Networks
Ph.D. Date: 5 March 2024

Dr. Santiago ANDRÉS
Current Position: Assistant Professor at Universidad Politécnica de Madrid, Spain
Ph.D. Date: 10 May 2023

Dr. Pelayo VALLINA
Current Position: Senior Data Privacy Specialist. MAPFRE. Madrid. Spain
Ph.D. Date: 17 January 2023

Dr. Oluwasegun OJO
Current Position: Postdoctoral Research Fellow. UC3M-Santander Big Data Institute (IBIDAT), UC3M. Madrid
Ph.D. Date: 30 November 2022

Dr. Álvaro FEAL
Current Position: Internet Measurements Researcher, Cisco Systems, USA
Ph.D. Date: 29 November 2022

Dr. Dolores GARCIA MARTI

Current Position: Senior Fellow at CERN. Geneva, Switzerland
Ph.D. Date: 28 September 2022

Dr. Julien GAMBA

Current Position: Data scientist. Cisco Systems. Madrid, Spain
Ph.D. Date: 15 September 2022

Dr. Mohamed Lamine MOULAY

Current Position: Technical Product Owner. Signicat. Madrid, Spain
Ph.D. Date: 20 July 2022

Dr. Víctor SÁNCHEZ AGÜERO

Current Position: UAS Engineer at GMV. Madrid. Spain
Ph.D. Date: 5 July 2022

Dr. Alejandro BLANCO

Current Position: RAN Innovator Engineer. Telefonica. Madrid, Spain
Ph.D. Date: 19 May 2022

Dr. Constantine AYIMBA

Current Position: Post-Doc Researcher. University Carlos III of Madrid. Madrid, Spain
Ph.D. Date: 19 May 2022

Dr. Noelia PERÉZ PALMA

Current Position: Postdoctoral Research Assistant. Universidad de Murcia. Spain
Ph.D. Date: 3 February 2022

Dr. Pablo JIMÉNEZ MATEO

Current Position: DevOps Engineer. Exheus. Barcelona. Spain
Ph.D. Date: 17 December 2021

Dr. Luis F. CHIROQUE

Current Position: Data Scientist. TAPTAP Digital. Madrid, Spain
Ph.D. Date: 15 November 2021

Dr. Nuria MOLNER

Current Position: R&D engineer. iTEAM Research Institute of Universitat Politècnica de València. Valencia, Spain
Ph.D. Date: 30 September 2021

Dr. Elizaveta DUBROVINSKAYA

Current Position: Board Member. Teleone OÜ. Tallinn. Estonia.
Ph.D. Date: 9 June 2021

Dr. Vitalii DEMIANIUK

Current Position: Post-Doc Researcher. Ariel University. Israel
Ph.D. Date: 24 February 2021

Dr. Joan PALACIOS

Current Position: Antenna Research Engineer. Pivotal Commware. Kirkland, Washington, USA
Ph.D. Date: 23 October 2020

Dr. Patricia CALLEJO

Current Position: Visiting Professor. University Carlos III of Madrid. Madrid. Spain
Ph.D. Date: 8 September 2020

Dr. Edgar ARRIBAS

Current Position: Profesor Doctor. Department of Mathematics and Data Science - CEU San Pablo University. Madrid. Spain
Ph.D. Date: 29 July 2020

Dr. Maurizio REA

Current Position: Project Manager at ICT consulting, Italy
Ph.D. Date: 12 June 2020

Dr. Ander GALISTEO

Current Position: Senior Firmware Engineer. Dojo Five: The Embedded Experts. St. Paul, Minnesota. USA
Ph.D. Date: 3 June 2020

Dr. Dario BEGA

Current Position: Network System Automation Researcher. Nokia Bell Labs Core Research. Munich. Germany
Ph.D. Date: 17 April 2020

Dr. Yonas Mitike KASSA

Current Position: Research Scientist. Eurecat. Spain
Ph.D. Date: 14 February 2020

Dr. Pavel CHUPRIKOV

Current Position: Post-Doc Researcher. Universita della Svizzera Italiana. Lugano. Switzerland
Ph.D. Date: 14 November 2019

Dr. Carlos DONATO

Current Position: Project Manager. Zhilabs. A Samsung Company. Madrid. Spain
Ph.D. Date: 7 November 2019

Dr. Guillermo BIELSA

Current Position: Aerial Communications Engineer, Indra Sistemas, Madrid, Spain
Ph.D. Date: 26 July 2019

Dr. Hany ASSASA

Current Position: Senior System Engineer. Pharrowtech. Leuven. Belgium
Ph.D. Date: 23 July 2019

Dr. Roberto CALVO-PALOMINO

Current Position: Associate Professor. Department of Signal Theory and Communications, Telematics and Computing. Universidad Rey Juan Carlos. Madrid. Spain
Ph.D. Date: 10 July 2019

Dr. Foivos MICHELINAKIS

Current Position: Research Scientist. Simula Metropolitan Center for Digital Engineering (SimulaMet). Oslo. Norway
Ph.D. Date: 19 September 2018

Dr. Aymen FAKHREDDINE

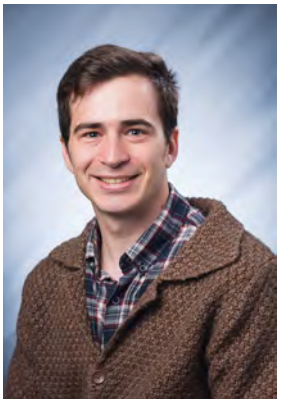
Current Position: Principal Investigator, University of Klagenfurt, Austria & Senior researcher, TII, UAE
Ph.D. Date: 14 June 2018

Dr. Roderick FANOU

Current Position: Systems Engineer. Cloudflare, Inc. Austin, Texas, USA
Ph.D. Date: 14 December 2017

Dr. Christian VITALE

Current Position: Research Associate. KIOS Research and Innovation Centre of Excellence (KIOS CoE). Nicosia. Cyprus
Ph.D. Date: 9 June 2017



Dr. José A. RUIPÉREZ-VALIENTE

Current Position: Associate Professor. Department of Information and Communications Engineering. Universidad de Murcia. Murcia. Spain
Ph.D. Date: 31 May 2017

Dr. Evgenia CHRISTOFOROU

Current Position: Research Associate (Fairness and Ethics in AI - Human Interaction Group) at the CYENS-Centre of Excellence, Nicosia, Cyprus
Ph.D. Date: 25 May 2017

Dr. Nicola BUI

Current Position: Senior Research Engineer. Bastille. Boston. Massachusetts. USA
Ph.D. Date: 12 May 2017

Dr. Angelos CHATZIPAPAS

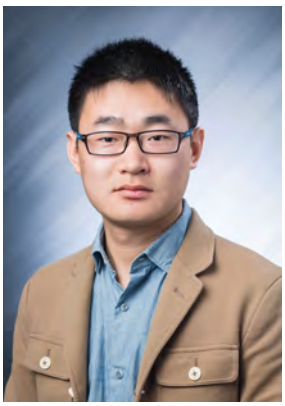
Current Position: Engineering Lead. Lloyds Banking Group. London. United Kingdom
Ph.D. Date: 25 November 2016

Dr. Elli ZAVOU

Current Position: Service Delivery Manager and Data Governance Expert. StratioBD. Madrid. Spain
Ph.D. Date: 30 September 2016

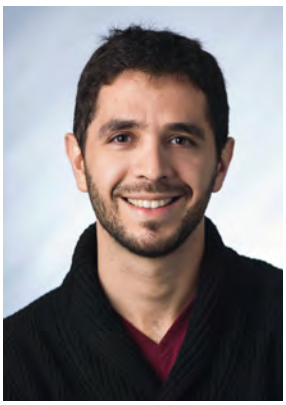
Dr. Syed Anwar UL HASAN

Current Position: Postdoctoral Researcher. ETH Zurich. Switzerland
Ph.D. Date: 20 June 2016



Dr. Qing WANG

Current Position: Assistant Professor. Delft University of Technology - TU Delft. Delft. The Netherlands
Ph.D. Date: 19 May 2016



Dr. Juan Camilo CARDONA

Current Position: Senior Software Engineer. NTT GIN
Ph.D. Date: 6 May 2016

Dr. Pablo SALVADOR

Current Position: Agile Delivery Leader. Paradigma Digital. Madrid. Spain
Ph.D. Date: 8 April 2016

Dr. Gek Hong SIM

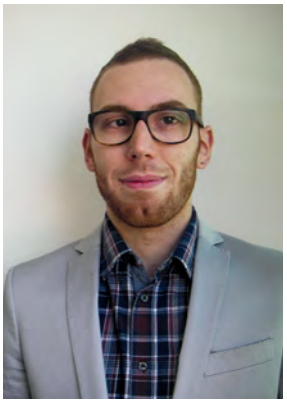
Current Position: Post-doc Researcher. TU Darmstadt. Germany
Ph.D. Date: 30 March 2016

Dr. M. Isabel SANCHEZ

Current Position: Postdoctoral Fellow. Simula Research Laboratory. Oslo. Norway
Ph.D. Date: 8 March 2016

Dr. Arash ASADI

Current Position: Assistant Professor at TU Delft. NetherlandsPh.D. Date: 8 March 2016



Dr. Vincenzo SCIANCALEPORE

Current Position: Principal Research Scientist. NEC Laboratories Europe. Heidelberg. Germany
Ph.D. Date: 27 November 2015

Dr. Thomas NITSCHE

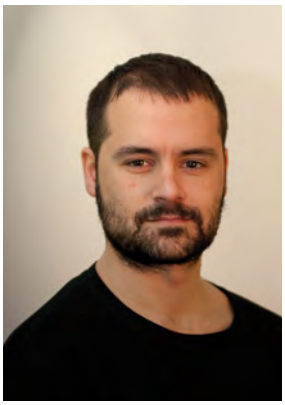
Current Position: Wissenschaftlicher Mitarbeiter/Research Fellow. Fraunhofer Institute for Embedded Systems and Communication Technologies ESK. Munich. Germany
Ph.D. Date: 25 September 2015

Dr. Ignacio CASTRO

Current Position: Lecturer. Queen Mary University of London. UK
Ph.D. Date: 20 July 2015

Dr. Fabio GIUST

Current Position: Security Product Manager. Hewlett Packard Enterprise. Vicenza, Italy
Ph.D. Date: 5 March 2015



Dr. Jordi ARJONA AROCA

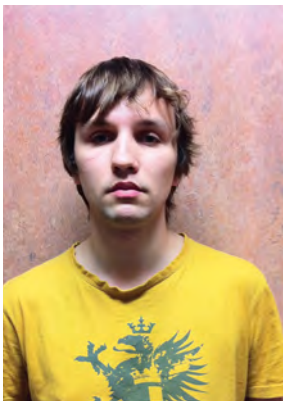
Current Position: Research line coordinator. Instituto Tecnológico de Informática (ITI). Valencia. Spain
Ph.D. Date: 13 February 2015

Dr. Andra LUTU

Current Position: Senior Researcher. Telefonica Research and Development. Madrid. Spain
Ph.D. Date: 11 November 2014

Dr. Agustín SANTOS

Current Position: Deputy Assistant Director. Ministry of Finance, Spanish Public Administration. Madrid. Spain
Ph.D. Date: 3 June 2013



Dr. Michal KRYCZKA

Current Position: Manager. Accenture. Warsaw. Poland
Ph.D. Date: 7 February 2013

Dr. Marco GRAMAGLIA

Current Position: Visiting Professor. Universidad Carlos III de Madrid. Madrid. Spain
Ph.D. Date: 26 September 2012

Dr. Alex BIKFALVI

Current Position: Software Engineer. Adevinta. Barcelona. Spain
Ph.D. Date: 18 July 2012

Dr. Paul PATRAS

Current Position: Reader and Chancellor's Fellow. School of Informatics. University of Edinburgh. United Kingdom
Ph.D. Date: 18 March 2011

research team structure

network design&intelligence

Research Professors
- Dr. Albert Banchs
- Dr. Arturo Azcorra
- Dr. Guillermo Carpintero
- Dr. Antonio Fernández Anta
- Dr. Marco Fiore
- Dr. Claudio Fiandrino
- Dr. Sergey Gorinksy

Senior Researchers
- Dr. Jose Aguilar

Pre-Doc & Post-Doc Researchers
- Dr. Antonio Bazco-Nogueras
- Dr. Livia Elena Chatzieleftheriou
- Dr. Nadezda Chukhno
- Dr. Diego Madariaga
- Dr. Orlando E. Martínez-Durive
- Iñaki Bravo
- Beyza Bütün
- David de Andrés
- Ada D'Iorio
- Ángela Díaz-Bricio
- Sergio Díaz Aranda
- Abhishek Duttagupta
- Andrea Fresa
- Sara Ibáñez
- Arivarasan Karmegam
- Masoumeh Khodarahmi
- Blanca López
- Reza Namvar
- Máximo Pirri
- Anna Polyanskaya
- Romina Rodríguez
- Antonio Russo
- Islomjon Shukhratov
- Lucía Uguina
- Junlang Wang
- Ruben Thilo Severin Wendt

wireless communication&sensing

Research Professors
- Dr. Joerg Widmer
- Dr. Carlos Jesús Bernardos
- Dr. Domenico Giustiniano
- Dr. Marco Ajmone-Marsan
- Dr. Vincenzo Mancuso
- Dr. Katia Obraczka

Senior Researchers
- Dr. Jesús Omar Lacruz

Pre-Doc & Post-Doc Researchers
- Dr. Andrea Bedin
- Dr. Marco Canil
- Dr. Edson Dos Santos
- Dr. Dayrene Frómeta
- Dr. Nina Grosheva
- Dr. Farzam Nosrati
- Dr. Juan Marcos Ramirez
- Dr. Timothy Otim
- Dr. Giuseppe Santaromita
- Dr. Luca Santoro
- Dr. Syed Waqas Haider Shah
- Ghina Al Atat
- Salvatore Corallo
- Freddy del Ángel
- Sai Pavan Deram
- Stavros Eleftherakis
- Rita Ingabire
- Chen Jaminon De-Roeck
- Stefano Kron
- Serly Moghadas Golian
- Bei Ouyang
- Francesco Pigato
- Rafael Ruiz
- Pablo Saucedo de Miguel
- Salil Sharma
- Michele Simeone
- Javier Talavante
- Tongyun Yang

network measurements, cybersecurity&privacy

Research Professors
- Dr. Lucianna Kiffer
- Dr. Nikolaos Laoutaris
- Dr. Guillermo Suárez-Tangil
- Dr. Narseo Vallina-Rodríguez

Senior Researchers
- Dr. Marius Paraschiv

Pre-Doc & Post-Doc Researchers
- Dr. Prerna Arote
- Dr. Javad Dogani
- Dr. Aniketh Girish
- Dr. Devriş Işler
- Vinuri Bandara
- Miguel Ángel Bermejo
- Carlos Fajardo
- Alexandr Goultiaev Tolstokorov
- Behafarid Hemmatpour
- Aninda Lahiri
- Naicheng Li
- Louis Miermont
- Mariella Mischinger
- Alfonso Rodríguez
- Oriol Saguillo
- Nipuna Weerasekara

our current team

Comunidad de Madrid

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STRUCTURAL FUNDS

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