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A study involving IMDEA Networks detects cheating in video games

Cheats in video games occur frequently. However, in recent times the techniques for creating them have been perfected, acting in a similar way to malware, which makes the work of companies creating anti-cheat mechanisms more difficult. A group of international researchers, including IMDEA Networks professor Guillermo Suárez-Tangil, has conducted a study that helps game developers and the anti-cheat industry to identify attack vectors more quickly.

“This work is the **largest existing measurement of the ecosystem that hackers use to learn how to create video game cheats**. We see that the core component of a cheat is common to most hacks, and it is a tool that grants hackers access to the victim process, namely injector. We develop an automated method capable of detecting if a particular binary has injecting capabilities”, explains Suárez-Tangil.

The novelty of this research lies in the methodology used, which analyzes online forums such as Multiplayer Game Hacking (MPGH) and **UnknownCheats** (UC) to characterize the cheater ecosystem. It is able to show which forum posts share actionable cheats. Suárez-Tangil notes: "By creating a systematic method that can identify injectors, **we can use our system as a proxy to accurately detect cheaters**". He adds: "We found that most of the cheats are developed by a small number of contributors."

Also, during the research, they have observed how **hackers have built a very active online community** where they share knowledge and trade products and services. Detecting cheaters is a daunting task due to the diversity of video games, the type of hacks (so-called cheats), and the rapidly changing landscape. "However, by using our methodology we see that it is feasible to accurately identify whether a program has injection capabilities," says Suárez-Tangil.

How does cheating affect the industry and other players?

Within the gaming industry, one of the fastest growing areas internationally is eSports, the name given to professional video game competitions. The video game industry is one of the most lucrative businesses worldwide. It had a turnover of 147 billion euros in 2020, according to the US consulting firm Newzoo. Hence, **anti-cheating software companies fight to prevent cheating players from having an advantage over their rivals** and ruining the fun by causing other players to quit the game exhausted by this situation. In addition, it is worth noting the significant financial losses for video game companies.

"Online video games are currently generating high stakes. The prizes awarded in recent

competitions amount to $6 million, with an average price per player of around $100,000. Hackers can use video game hacks to gain an advantage over other players. **Developing these hacks requires highly technical expertise**," highlights the IMDEA Networks professor.

These cheats are a threat to the security of online users, as they are at a disadvantage when playing against dishonest users. "However, there is also **an active interest in compromising the login credentials of other players** to then monetize the account (e.g. by selling virtual goods to other players)," stresses Suárez-Tangil.

Today there are specialized websites for the sale of items with which players can level up, in addition to the sale of cheats and the resale of hacked accounts. The reality is that **this economy is growing exponentially** due to the demand of cheaters who seek to modify the difficulty of the game as they please. Fortunately, the research in which IMDEA Networks is participating lays the foundations for detecting the latest advances developed against video games.

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IMDEA Networks Institute, promoted by the Regional Government of Madrid, is a research organization on computer and communication networks whose multinational team is engaged in cutting-edge fundamental science and technology. As a growing, 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, 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, social networks, underwater networks, vehicular networks, wireless networks and more…

IMDEA Networks Institute
28918 Leganes (Madrid) Spain
Avda. del Mar Mediterráneo, 22

+34 91 481 6210
mediarelations.networks@imdea.org
www.networks.imdea.org

Twitter: @IMDEA_Networks | Facebook | Instagram | Flickr | YouTube