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Researchers develop 'safe' quarantine monitoring system

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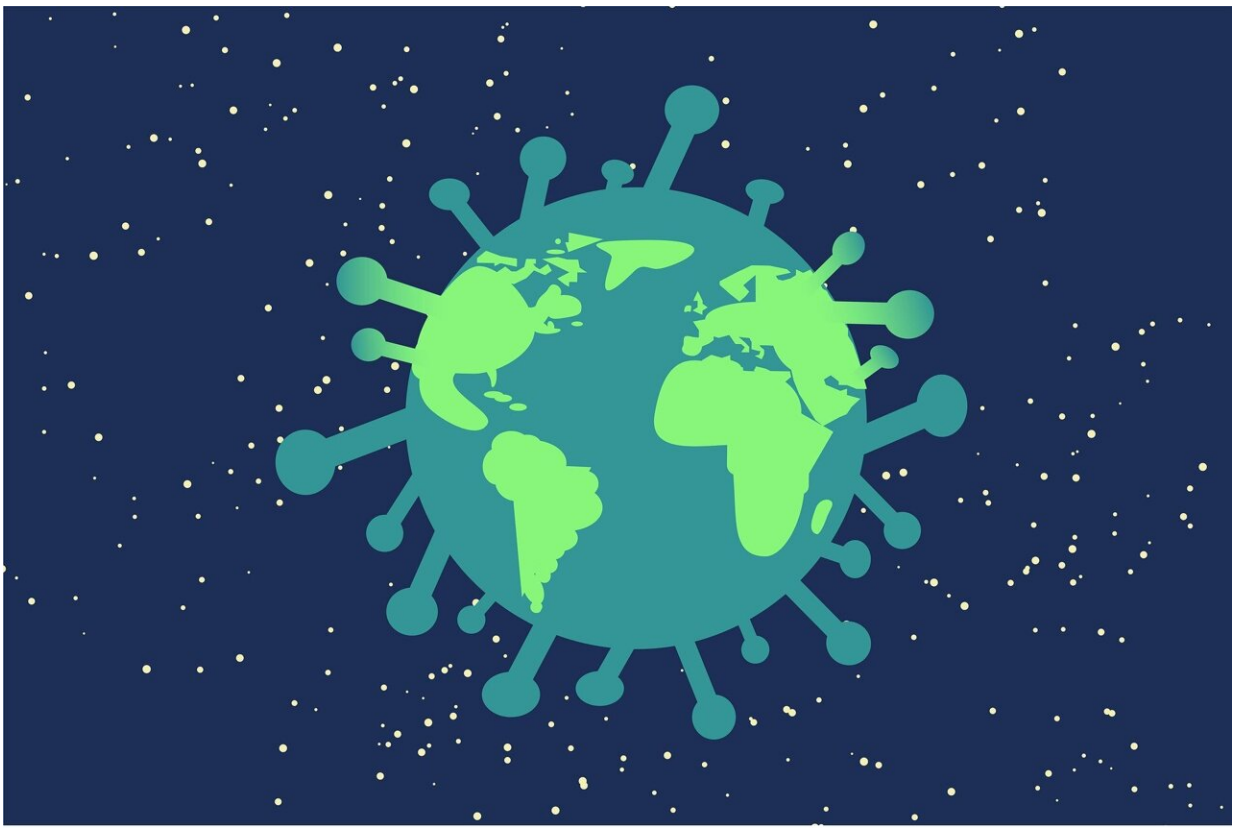

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A School of Computer Science researcher is collaborating with the NSW Smart Sensing Network (NSSN) and the University of Technology to deliver a quarantine monitoring system that could be used by arrivals

once state and national borders reopen.

The Pandemic Impact Control System (PAIMCOS) is an easily accessible quarantine monitoring technology that only requires a smart phone and an internet connection.

The system does not require users to download an app and has been designed to collect minimal personal data, which will then be destroyed after the quarantine period is completed.

Users would simply need to send a text message to a secure number, which would then ask them to log in to a website. The website would then access the user's location, however would not store these details beyond the monitoring period/quarantine period.

The system addresses privacy concerns voiced in response to other quarantine monitoring applications currently in use across Australia by interacting with users without collecting data, alleviating concerns of mass surveillance.

Working with NSSN and UTS, Dr. Seneviratne said it was important that PAIMCOS collect the absolute minimum amount of data required to verify a user's quarantine compliance.

"We're bringing our expertise in cybersecurity and data privacy to this project, ensuring the data is collected securely, and that it will be permanently destroyed after the quarantine period."

In addition to home-quarantine monitoring, PAIMCOS has boundary management functions allowing for effective management of hotspots (areas where cases are high and movement is restricted) and 'honeypots' (areas they may wish to enter illegally, such as sporting events).

PAIMCOS CEO Adrian Iordachescu said the project aims to strengthen the system by using Machine Learning (ML) and Artificial Intelligence (AI) to optimize the sequence for fraud prevention, high scalability and protection against cyber-attacks.

"While the system involves innovative technological design, the aim has been a practical one; to meet the challenges of working across a large and highly diverse population—such as the population of greater Sydney," Mr Iordachescu said.

"While PAIMCOS presents the foundational concepts, it is through collaboration with NSSN, UTS and University of Sydney that these concepts will provide a robust solution. PAIMCOS will play a central role in further securing our society after vaccination targets are reached."

Associate Professor Yang Wang from the UTS Data Science Institute said the system alleviates the security and privacy concerns often associated with other quarantine monitoring systems.

"The system does not require users to download and install an app. Instead, it uses geofencing and the user's voice to verify their identity," Associate Professor Wang said.

"Using advanced AI algorithms, we optimize the timing of compliance checks based on the circumstances of each individual, which minimizes the risk of non-compliance and ensures interruption for the users is minimal."

Provided by University of Sydney