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Safeguarding the NATION'S DIGITAL FUTURE

These three Smart Nation scholars are using AI to protect lives and combatting cyber threats with their tech skills

As artificial intelligence (AI) and digitalisation continue to transform industries and influence day-to-day activities, Singapore is proactively nurturing individuals to safeguard the nation's digital landscape.

The Smart Nation Scholarship – jointly offered by the Cyber Security Agency of Singapore (CSA), Government Technology Agency (GovTech) and Infocomm Media Development Authority (IMDA) – opens doors for young talents to carve out a career in tech and contribute to a technologically advanced future.

Recipients can specialise in cybersecurity, application design, development and deployment, sensors and the Internet of Things, data science and AI, geospatial data, infocomm technology infrastructure, or technology policy and governance.

Here, three Smart Nation scholars share how they are using their skills to bolster the nation's digital future.

PHOTO: SPH MEDIA

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>
> MR CHU WEI HAO
> RESEARCH ENGINEER, IMDA
> Recipient of the Smart Nation Scholarship

Pushing digital frontiers to boost security

In the fast-evolving world of AI today, as more companies in Singapore use AI in their products and services, fostering the public's trust in AI technologies becomes a priority. There is a need to develop the sciences and grow AI governance testing and evaluation through an open-source framework.

This is why IMDA launched AI Verify, the world's first AI testing framework and software toolkit to promote transparency. It allows AI system owners to verify the claimed performance of their AI systems against a set of internationally-recognised AI ethics principles through standardised tests.

Smart Nation scholar Chu Wei Hao was part of the team who helped develop the free open-source software toolkit.

"When developers claim their AI systems are robust, transparent and fair, they can tap on AI Verify to prove it," explained the 27-year-old research engineer at IMDA.

Even though he has only been working at IMDA since March 2023, Mr Chu has already been involved in several pioneering projects and research on cutting-edge technologies.

He is currently with its BizTech Group's Trust Tech Engineering team, tasked with developing technologies to help guarantee privacy, secure trust and provide confidence to people and firms to transact digitally.

He has also been studying opportunities in blockchain – public digital ledgers that record transactions across multiple computers so they cannot be altered.

Mr Chu joined IMDA as a Smart Nation scholar after graduating from the Singapore Management University-Carnegie Mellon University Masters Fast-Track Programme with a degree in Information Systems Management.

Under the agency's effort to broaden staff's exposure, besides his involvement in the research on emerging technologies, he also reaches out to small and medium-sized enterprises to assist them in their digitalisation journey, as part of the Digital Industry Singapore office.

Just four months into his IMDA career, he is proud to be one of the Smart Nation scholars.

"It has provided me with ample training opportunities and exposure to tech events, enabling me to keep learning and growing even after graduating," he says.

PHOTO: SPH MEDIA

> **I experiment with cutting-edge models and techniques within the computer vision to hone AI capabilities and provide technical support to government agencies.**
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> MS GOH JIA YI
> ASSOCIATE AI ENGINEER, GOVTECH
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A smart vision for the future

How do you improve safety in construction sites? A smart video system that acts like an "eye" to monitor activities and flag safety violations 24 hours a day could be the answer. When it senses workers standing too close to moving excavators, for example, it will send alerts or warning signals to the site's safety and health officers.

Ms Goh Jia Yi, 24, is part of a team to help create such a solution in collaboration with other government agencies. As an AI engineer in GovTech's Data Science and Artificial Intelligence Division's video analytics team, she focuses on computer vision algorithms to come up with ways to enable computers to analyse videos and images.

"I experiment with cutting-edge models and techniques within the computer vision to hone AI capabilities and provide technical support to other government agencies on their projects," she explains.

She has been involved in developing GovTech's Video Analytics System, a platform that lets government agencies use video analytics and machine learning without any coding. They have used it to produce services such as Balefire and Mobius. The former is a smoking detection tool, while the latter analyses pedestrians, cyclists and traffic using video analytics.

She learnt about the Smart Nation Scholarship and applied for it while studying business analytics at the National University of Singapore.

"I've been interested in tech since young. I still remember the excitement I felt when I came across the scholarship. I knew that with it, I could contribute meaningfully to Singapore while furthering my passion for technology."

Although she intended to be a data analyst, an internship at GovTech's Smart City Technology Division in 2020 as part of being a scholar introduced her to computer vision. "I helped to build an exercise detection and rep counting application, which made me realise that I want to be a hands-on developer."

She also saw other GovTech staff put together a self-service temperature scanner to fight the spread of Covid-19.

These instances convinced her that she chose the right scholarship.

She says: "I already admired many of GovTech's products, including SingPass, but my internship experience showed me how agile the organisation is, how quickly it can respond to crises and build things. I'm constantly learning on the job, which is something that truly gives me joy."

Protecting our cyberspace

Upon receiving information of a cyber attack on a Singapore firm, Ms Ong Jing Yin and her colleagues swung into action. Their work involved identifying and isolating the compromised machines and working with the firm on measures to prevent potential re-entry into the company's network.

The intervention, which stopped the attackers from further infecting other assets and exfiltrating sensitive data, is part of Ms Ong's day-to-day work. The 26-year-old is a malware analyst for CSA's National Cyber Incident Response Centre.

"It's like being a digital detective. Just as detectives solve mysteries, I investigate computer systems and solve digital puzzles," she says.

Her work goes beyond helping organisations to repel cyber attacks.

"The ability to communicate complex technical concepts in a clear and accessible manner is essential, especially when explaining the concerns arising from the cyber attack to key stakeholders of the affected company during an incident response. We must be able to convey the situation clearly that we can work together effectively to mitigate the threat."

Ms Ong became passionate about cybersecurity after taking part in a cyber tournament while studying computer science at the National University of Singapore. During the event, a team compromised her team's computers and used them to infect the entire hall. While the incident did not cause any "real" harm outside of the tournament, it opened her eyes to the impact cyber attacks can have in the real world.

"This incident sparked my interest in cybersecurity and helped to shape my decision to pursue a career in this field.

"When I came across the Smart Nation Scholarship, CSA instantly stood out to me because of its focus on safeguarding our cyberspace. The need for cybersecurity as an integral part of our digitalisation efforts resonated with me and I saw this scholarship as an opportunity to be part of something meaningful and impactful," Ms Ong says.

PHOTO: SPH MEDIA

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Scan for more on the Smart Nation Scholarship.

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