

# BUILDING UP THE NATION'S DEFENCE

By Charlene Koh



The DSTA Scholarship seeks to cultivate the next generation of defence scientists and engineers who will keep Singapore safe.

In the 21st century, national security is a multi-faceted affair comprising more than just a country's armed forces. While the Singapore Armed Forces (SAF) forms the foundation of our nation's defence, our community of defence engineers and scientists is responsible for providing leading-edge technological solutions to ensure that the SAF continues to be a formidable fighting force for the defence and security of Singapore. To do this, they seek out cutting-edge technological solutions and hardware, supported by a creative work environment where collaboration and innovation thrive.

from the Defence Science and Technology Agency (DSTA) and DSO National Laboratories (DSO) respectively, to find out more about their work at the forefront of defence technology and the opportunities they have enjoyed with the DSTA Scholarship.

## WHY DID YOU DECIDE ON THE DSTA SCHOLARSHIP?

Eunice Teo: I developed an interest in coding and IT after using the internet for the first time at age 12. This led me to explore webpage creation and coding in HTML, and I eventually ventured into more complex programming languages.

Scholarship stood out as I believe the most advanced technologies are applied in the field of defence. Mobile technologies were also trending then, and I read about how National Servicemen were starting to use iPads in their training. Ultimately, with my strong interest in coding, I was convinced that the DSTA Scholarship was the best choice that would offer me opportunities to develop cutting-edge mobile solutions for Singapore's defence.

Jeffrey Lee: When I was considering my career options back in 2007, I was inspired by the massive strides in technology taking place then. For instance, Tesla had just launched the Roadster, their first electric

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**EUNICE  
TEO SHU JUAN**  
DSTA SCHOLAR

Senior Engineer, Cybersecurity Programme Centre, DSTA

We speak to DSTA scholars Eunice Teo and Jeffrey Lee,

While researching on scholarships, the DSTA

sports car, and the mobile phone industry was being revolutionised by the introduction of the iPhone and budding Android devices.

It was an exciting period for the technology sector, and a career in engineering appeared an obvious choice to me if I wanted to be a part of applying this technology to effect positive changes in society. To that end, the DSTA Scholarship was attractive as it offered opportunities to work with complex military systems and technical problems, all for the purpose of contributing to our nation's defence.

**WHAT OPPORTUNITIES HAVE YOU ENJOYED AS A DSTA SCHOLAR?**

Eunice: I completed two internship stints at DSTA's InfoComm Infrastructure Programme Centre, both of which proved exciting and insightful as I was able to explore and apply various programming languages in developing applications for the SAF. It was also fulfilling to see the applications I developed being trialed by SAF partners, and to gather their feedback. As a student, this was key to affirming my interests and developing my technical competencies.

Jeffrey: I had the opportunity to be part of the International Student's Union committee in my penultimate year at the University of Cambridge. This

allowed me to work with a diverse team of people from different countries, which really helped me appreciate various cultures and working styles.

That year, I also spent the summer as an intern in Cambridge at the Faculty of Computer Science. This involved designing projects using the Raspberry Pi for outreach purposes to encourage students to participate in the Science, Technology, Engineering and Mathematics (STEM) fields.

**TELL US MORE ABOUT YOUR JOB.**

Eunice: I am responsible for developing and implementing cyber solutions that allow our defence systems and networks to monitor, investigate, contain and recover rapidly from cyberattacks. These solutions are mainly applied in the domain of mobile technologies. Developing innovative solutions to ensure that these critical IT infrastructures are secure and robust is key to my work.

Jeffrey: As of now, I'm working in the area of electronic warfare.

This involves safeguarding our armed forces' use of the electromagnetic spectrum on the battlefield, while also denying our adversaries' use of the same spectrum.

A typical day at work may involve studying different electronic warfare techniques, running software simulations and performing validations through hardware testing in the lab or field trials. More importantly though, I analyse the results to assess the effectiveness and limitations of various techniques in order to understand the nuances of choosing one technique over another.

**SHARE WITH US SOME MEMORABLE EXPERIENCES YOU'VE HAD ON THE JOB.**

Eunice: During the MERS outbreak in 2015, I was part of the team that worked on a mobile application that could efficiently and effectively trace people who came into contact with patients. The team took just three weeks to design and prototype the application and it was definitely rewarding as the

idea was eventually accepted by the Ministry of Health.

The opportunity to work in a multi-disciplinary team within DSTA and from other agencies was especially enriching. I gained valuable insights into other engineering domains and forged valuable bonds with like-minded individuals. Through collaboration, I was also exposed to diverse engineering domains and exchanged techniques with experts from other fields.

Jeffrey: One of the most memorable experiences I've had was the chance to participate in a field trial to validate a particular electronic warfare technique. My team and I had to collaborate with personnel from the SAF to conduct the trial outfield. Time was of essence, and we only had a limited number of opportunities to conduct our experiments. This meant that cooperation and efficiency were paramount, and we also had to analyse our results on the go and tweak our tests as needed. This was really challenging, but the trial was successfully completed, much to the satisfaction of everyone.

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**LEE JIAN HAN**  
**JEFFREY**  
DSTA SCHOLAR

Member of Technical Staff, DSO

