Delving into applied research

DSO senior defence researcher Huang Yipeng transforms data analytics into functional safeguarding solutions

AUDREY NG

MOST people do not travel to remote areas of Singapore for work, but Mr Huang Yipeng has discovered swathes of forests and large areas of land that he did not know existed in the country.

A senior defence researcher (Data Analytics) with the DSO National Laboratories (DSO), he has to travel to offsite locations at times, which could be in Changi or Tuas, to oversee trials or meet clients such as the Republic of Singapore Navy.

"Once, we were travelling to our customer's site when we were caught in a dust cloud so thick that we couldn't see the lights of the truck in front of us even though it was during the day. The experience was totally surreal because it happened in Singapore," he says.

Most of his days, however, are spent at his desk working on data analytics and algorithms.

He develops "proofs of concepts" that demonstrate how technologies like big data and machine learning can meet real operational needs such as detecting a vessel behaving abnormally, which could indicate potential danger.

He has the freedom to plan how he spends his day at work.

At times, he can be found in the laboratory conducting checks on the computer systems or having discussions with his team, which can vary from two to 20 people.

His work sometimes requires him to collaborate with external agencies, such as the Defence Science and Technology Agency (DSTA) and ST Engineering.

He is currently working with artificial intelligence technology that will enhance maritime security. He has to ensure that his program understands the possibilities that could happen out at sea and prescribe an appropriate response.

"I am very good at getting performance out of complex systems because I understand how they work under the hood. Not everyone gets this but it makes the difference between usable and unusable research. The Computer Systems Group at NUS was really instrumental in helping me develop this competency," says Mr Huang.

He enjoyed the time spent during his undergraduate years with two student research groups — the Computer Systems Group and Web Information Retrieval/Natural Language Processing Group.

The 29-year-old joined DSO four years ago, after graduating with a Bachelor of Computing (Computer Science) in 2012 from the National University of Singapore.
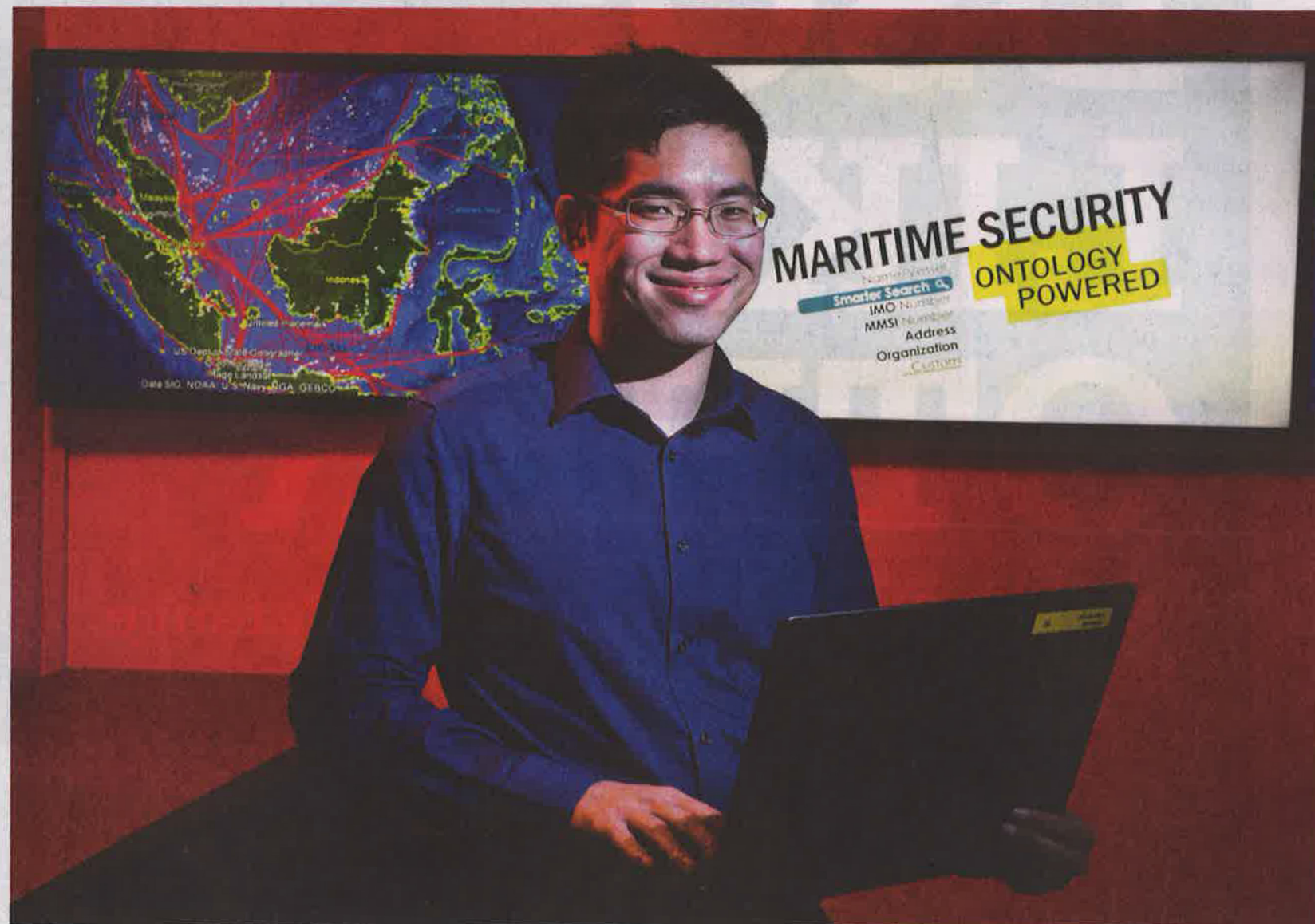
However, a career in the engineering research was an unlikely choice for him, as he initially wanted to design computer games for a living.

Doing academic research in university got him interested in the research field, and he wanted to explore the field of applied research as a career for its practical applications. Having done an internship at DSTA before, he knew the defence industry was the right fit for him.

Accelerated learning

The largest research institute for defence technology in Singapore, the DSO's work is highly confidential and Mr Huang realised that there were things at work that he was unable to learn in school.

"The company understands

Mr Huang is currently working with artificial intelligence technology to enhance maritime security. PHOTO: CHONG JUN LIANG

this," he says.

"On my first day of work, I was told that I was not expected to hit the ground running and my mentor helped to ease the learning curve by breaking down big problems into smaller ones."

He recalls his first task was to perform a literature review and his mentor provided a detailed evaluation to help him.

He was also assigned a buddy at work — someone of the same job level — who introduced him to his colleagues, helped ease him into the working environment and guided him on admin processes in the early days of his job.

An open learning culture among colleagues allows him to learn from his peers and he has progressed from working on a small role in a project to managing projects by himself.

He adds: "My management is very good at protecting engineers from attending too many meetings and lets us focus on technical development."

Engineers also have opportunities to travel overseas for conferences, such as the Neural Information Processing Systems conference and FUSION conference, to stay abreast of trends in the industry.

He is also keen to brush-up his soft skills such as networking and to attend courses on how to conduct crucial conversations and thinking on one's feet, organised by DSO's Learning and Development department.

A big believer in trying and exploring areas that one is interested in, he encourages students to "go all out" in pursuing their dreams.