

Scholar's Profile

Advancing Naval Communications

For Su Shiyan, clinching the DSTA Scholarship was the means to marry her passion for science and engineering with the opportunity to embark on a meaningful career.

As a teenager, Shiyan wanted a career that gives her a keen sense of mission and purpose. 'I have always wanted to stand up for what is right, and to defend my country. When I was younger, I thought of joining the police to chase and apprehend the bad guys,' she recalls with a smile. While her dream was to become a police officer, a growing interest in the sciences led her to consider a future in defence engineering.

After graduating from NJC in 2002, Shiyan applied for the DSTA Scholarship to study Electrical Engineering at NUS. She decided on the scholarship after learning of the diverse range of job and learning opportunities available in Singapore's defence ecosystem. 'In DSTA, I am able to put my engineering skills and knowledge to good use and be exposed to state-of-the-art technology, all while contributing to the defence of the nation,' she says.

Today, Shiyan is a DSTA project manager who leads a team to improve information sharing and communication among warships for better situational awareness and operational effectiveness. She is also involved in exploring innovative breakthrough solutions to enhance communication among naval vessels and aircraft. 'Advanced networked communication will enable the different platforms to communicate with one another at a faster speed,' Shiyan enthuses. Her role as project manager also sees her mentoring team members. Shiyan hopes to use the experience gained from managing projects to be involved in master planning - planning with a bigger picture in mind - in the future.

Shiyan credits her internship at the Air Logistics Organisation for preparing her for her work as a defence engineer. 'The internship gave me valuable insights into the close ties between DSTA and the Singapore Armed Forces, as well as the latter's needs and perspectives,' she reveals. 'It

also spurred me to excel in my studies, as I realised I would have to meet high expectations once I joined DSTA.'

After obtaining her degree with First Class Honours from NUS in 2007, Shiyan began her career in the Naval Logistics Organisation. Working on naval communications projects, she had her first taste of the sophisticated networked capabilities used by the Navy to enhance communication among vessels.

Shiyan enjoys the challenges and excitement her job brings. 'I love the variety of work here. A day in the office involves working on cutting-edge technologies and systems, conducting contract negotiations with suppliers, and holding brainstorming sessions and technical discussions with my team mates,' she shares. She also enjoys intellectual discussions with colleagues. Their deep domain knowledge also motivates and encourages her to excel in her work. 'Through my interactions with other teams, I am inspired by their passion for their work.'

To students deciding on which scholarship to take up, Shiyan sums up the benefits of the DSTA Scholarship: 'If you are looking for a fulfilling career in defence engineering, a chance to work among some of Singapore's brightest engineering minds, and a myriad of experiences to last a lifetime, then the DSTA Scholarship is the perfect fit for you.' □

SU SHIYAN DSTA SCHOLARSHIP

Age: 27

Now: Project Manager, Naval Systems, Defence Science and Technology Agency (DSTA)

Attained: Bachelor of Engineering (Electrical Engineering), NUS

From: National Junior College



Engineering Singapore's Defence

DSTA Scholar Benjamin Goh's passion for tinkering leads him to a challenging career in defence R&D.

As a boy, Benjamin was always curious about how things worked. In secondary school, he took apart a petrol engine in a remote-controlled car and put it back together again just to see how it functioned. He also remembers doing the same to one of his watches, but admits that it never worked again. Benjamin's tinkering led him to realise that he wanted a future in science and technology, and Engineering in particular.

However, it wasn't until his time in Junior College that Benjamin started to think more about his career path. By attending various scholarship fairs and events, he found out about the DSTA Scholarship. Benjamin took up the scholarship as he knew that it would give him the opportunity to study in prestigious overseas universities, and allow him to broaden his knowledge in his chosen field. It would also open the door to a career in DSTA, DSO or the other organisations in the Defence Technology Community.*

Graduating with First Class Honours and a Bramwell Medal for topping his course, Benjamin attributes his success in his studies to his passion for science and technology, and the immersive and hands-on Mechanical Engineering curriculum at the Imperial College London. The curriculum was a challenging one, but with the help of bright peers and professors, Benjamin succeeded in obtaining a robust academic grounding in the latest engineering technologies and practices.

However, it wasn't only the academic aspect of his overseas experience that challenged Benjamin. Being away from home, he had to learn to be independent. From managing his

finances and doing the laundry, to buying groceries and cooking meals, Benjamin had to be self-reliant. However, help was never far away as his seniors and Scholarship Officer were always willing to lend a hand or an ear. Benjamin's only lament is that his cooking skills did not improve much over his four years of living abroad!

Today, Benjamin is a proud member of the Marine Systems Programme in DSO's Sensors Division where he researches on and develops underwater systems for Autonomous Underwater Vehicles. He chose to join DSO after his graduation as he felt that DSO would allow him to explore new ideas, and allow him to apply his knowledge and creativity to develop defence systems that make a difference to Singapore's national security.

One of Benjamin's biggest challenges was the steep learning curve at the start of his career. He explained, 'Underwater systems and technologies were not covered in-depth during my studies, and it takes a good deal of experience to know what works and what doesn't. Thankfully, knowledge sharing is a big part of working in DSO and my more experienced colleagues are always willing to provide help and guidance.'

“ Benjamin develops underwater systems for Autonomous Underwater Vehicles. ”



**BENJAMIN GOH
KIAT MENG**
DSTA SCHOLARSHIP

Age: 26

Now: Research Engineer, Sensors Division, DSO National Laboratories (DSO)

Attained: MSc in Mechanical Engineering from Imperial College London, UK

From: Victoria Junior College

* DSTA Scholars have opportunities to work in the Defence Technology Community that comprises the Defence Science and Technology Agency, DSO National Laboratories, Centre for Strategic Infocomm Technologies, Air Logistics Organisation, Naval Logistics Organisation and Headquarters, Maintenance and Engineering Support (Army).

Scholar's Profile

Benjamin also appreciates the strong learning and development culture at DSO. Besides providing Benjamin with the flexibility to explore new research areas and test new ideas, DSO has given him the opportunity to grow professionally through various courses conducted both within and outside DSO. He has even attended a conference in the United States, allowing him to keep abreast of the latest developments in unmanned submersible technology, and learn from top-notch researchers from the academic, industrial and commercial arenas.

The knowledge-sharing and continuous learning culture in DSO is an important element in DSO's R&D environment. Looking ahead, Benjamin hopes to deepen his knowledge in his research area so that he can build up his know-how, and continue to develop game-changing solutions for Singapore's defence. □



I was attracted to the DSTA Scholarship because it offers a wide range of study and career opportunities in various engineering fields. The DSTA Scholarship provides a sterling and coveted opportunity to be among the smartest and brightest engineers in Singapore. The members at CSIT and organisations under the Defence Technology Community that I had the opportunity to speak with, enjoy their work and relish the challenges. I was reassured, seeing a future brimming with exciting prospects for both R&D and project management. In all these aspects, it was clear that the DSTA Scholarship was the best choice for me, and looking back, I can confidently say that I am very lucky to have seized this opportunity.

I decided to pursue Electrical Engineering at the University of Pennsylvania (UPenn) in the United States. Living on my own in a foreign country taught me to be more independent and it certainly equipped me with critical survival skills. The Scholarship Officers provided helpful counsel on how to adapt to overseas life, and the orientation programme even included basic cooking lessons. Although some things did not go smoothly – like I shrank my clothes in the dryer and my pineapple tarts did not turn out right – I learnt and laughed a lot during my overseas study experience.

I had many inspiring teachers at UPenn, including Prof Santosh Venkatesh from the Faculty of Electrical and Systems Engineering. One of the lessons I remember from him is George Pólya's problem-solving techniques, a heuristic for general problem-solving, not restricted to mathematical problems. (See page 48) Prof Venkatesh essentially wanted to foster in us critical thinking skills that we could apply in every aspect of our lives, and not just limited to specific techniques for solving certain types of problems.

During the summer break of my sophomore year, I came back to Singapore and interned with CSIT. An agency under the Ministry of Defence, CSIT focuses on R&D and solutions development in information and communication technologies to fulfil Singapore's strategic needs. There, I was involved in research on IP geolocation, studying the capability to detect the geographical location of an internet user. My positive experience with the exciting work,

Living On The Edge Of Technology

DSTA Scholar Tay Ying Hui shares her experience working at the forefront of defence technology.

organisation culture, and helpful mentors and colleagues led me to join CSIT after graduation.

Currently, as an R&D Engineer at CSIT, I monitor emerging trends and conduct R&D on data mining, visualisation and data analytics. For example, I explore Social Network Analysis, which aims to understand the underlying social roles of people and the communities they are in, in social networks such as Facebook. In this analysis, I study different algorithms to see which algorithms are best suited for different kinds of networks and which metrics are most useful to identify the different roles of people in a network.

It is very exciting to be working at the forefront of technology at CSIT and the sophisticated projects that we take on. It truly challenges one to think out of the box to come up with innovative solutions. The CSIT community is not all brains however; it is also dynamic and fun-loving.

The corporate philosophy of work-life balance and work-health ensures that CSIT is where staff can find both fulfilment and camaraderie at work and the space and time to enjoy personal interests and relaxing pursuits, be it wine or coffee appreciation, sharing of travel journals, contributing to community causes, or simply, working out at the in-house dance studio or gymnasium.

CSIT also has a number of special interest groups, and in the running group that

I belong to, we motivate one another and take part in several major running events during the year, including the Standard Chartered Marathon where we came in eighth in the corporate category.

Working at CSIT, I find myself constantly stimulated by the work and motivated by the enriching lives of the CSIT community. □

To apply, visit:
www.dsta.gov.sg
 Email: scholarship@dsta.gov.sg



TAY YING HUI DSTA SCHOLARSHIP

Age: 24

Now: R&D Engineer, Centre for Strategic Infocomm Technologies (CSIT)

Attained: MSc in Telecommunications and Networking from University of Pennsylvania, USA

From: Catholic Junior College