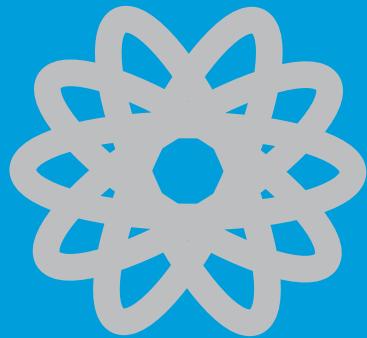
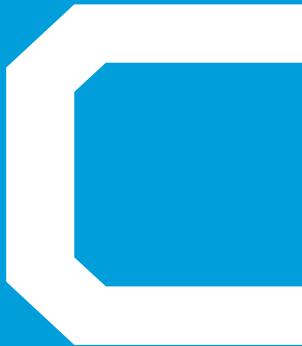


ASD  
CSD

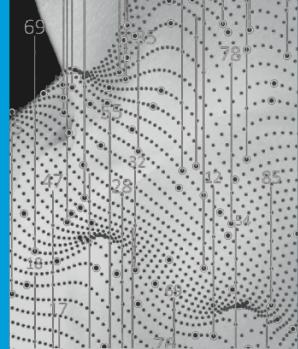
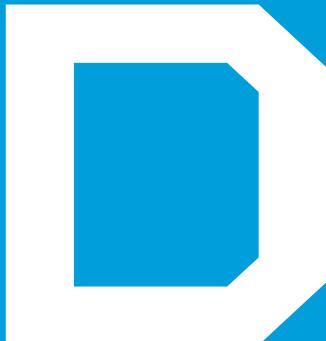
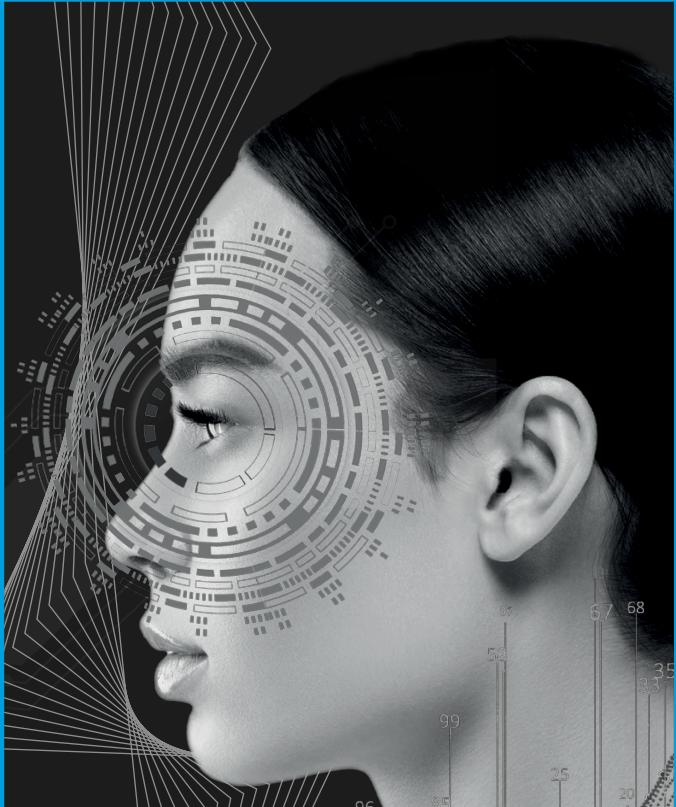
DAI  
EPD

ESD

OVERVIEW



## COMPUTER SCIENCE AND DESIGN



# DESIGNING INTELLIGENT COMPUTING SYSTEMS FOR THE FUTURE

We are often asked: How is the SUTD Computer Science and Design (CSD) programme different from other Computer Science programmes out there? Well, in a nutshell, we don't just teach you the fundamentals of computer science, we incorporate design thinking and expose you to real-world problems so that you apply what you learn effectively. Our strong Artificial Intelligent-based learning ensures that your skills remain relevant in this fast-changing world.

**WITH A STRONG FOCUS ON COMPUTING, SYSTEMS AND INTELLIGENCE, OUR CSD GRADUATES ARE THE DRIVERS OF THE FUTURE'S DIGITAL DEVELOPMENT. THEY POSSESS ABILITIES IN COMPUTING AND SYSTEMS KNOWLEDGE IN BOTH SOFTWARE AND HARDWARE, AS WELL AS THE POWER TO DESIGN MACHINES OF THE FUTURE WITH AUGMENTED INTELLIGENCE.**

Graduate with a Bachelor of Engineering in Computer Science and Design

## A COMPUTING SYSTEMS CURRICULUM UNDERSCORED BY INTELLIGENCE

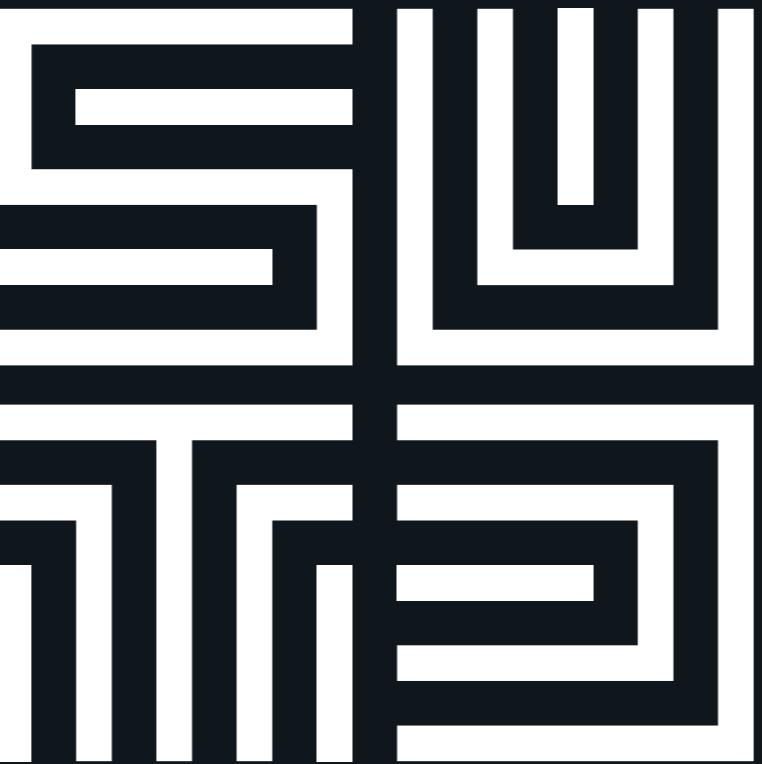
Over the course of the first three common Freshmore terms, you will have built a solid foundation in Science, Mathematics and Technology (SMT), Humanities, Arts and Social Sciences (HASS) and Design, which will prepare you for your CSD major.

The CSD programme focuses on information and computing technologies, and its relationship with the world. It integrates the traditional disciplines of

Computer Science and Information Systems. In addition to your CSD subjects, you will continue to take courses in HASS that will prepare you to be a new type of tech leader who embraces the cultural and social context of technology in the modern world.

Every undergraduate will have worked on at least 20 design projects throughout their years of study at SUTD. These experiences culminate in a two-term Capstone project in your graduating year. This allows you to work in teams with students from other majors and apply the skills you have mastered in CSD on either a client-sponsored industry-based project or your own entrepreneurial project to solve a real-world challenge. Upon graduation, you'll possess an extensive portfolio of industry-inspired projects, well-prepared for your career journey.

TRAILBLAZING A BETTER WORLD BY DESIGN.



## CSD CORE SUBJECTS

- Computation Structures
- Computer System Engineering
- Elements of Software Construction
- Introduction to Algorithms
- Introduction to Information Systems & Programming

+++

**Janice Tan**  
Associate Software Engineer,  
Government Digital Services Agile  
Consulting and Engineering  
Class of 2016, ISTD<sup>1</sup> Alumnus

SUTD equipped me with a **solid technical foundation and practical application of concepts**, allowing me to put them to use when I joined GovTech to develop citizen-centric products. In the increasingly complex world we live in today, multi-faceted problems can no longer be solved within a single area of expertise. SUTD has helped me **broaden my skill sets in collaborating with cross-functional teams, understanding and solving complex problems as well as exploring innovative approaches to meet user needs**. Working on multi-disciplinary projects at SUTD and the study of the arts and humanities have provided me with multi-perspective analytical skills.

<sup>1</sup> The Computer Science and Design (CSD) degree programme was originally named Information Systems Technology and Design (ISTD). It is a programme offered under the ISTD pillar.

## LEARNING OUTCOMES OF CSD CORE



### DEVELOP PROBLEM-DRIVEN COMPUTING SOLUTIONS

A strong mathematical grounding, algorithmic thinking and intense exposure to design empowers you to tackle challenges the right way, instead of simply focusing on tech-driven solutions.

### DESIGN MACHINES OF THE FUTURE

Develop machines with augmented intelligence to solve complex problems.

### ADAPT TO THE RAPIDLY CHANGING TECHNOLOGY LANDSCAPE

Adept at mastering new computing technologies that constantly emerge through hands-on projects.

### GAIN REAL-WORLD PROJECT MANAGEMENT SKILLS

Gain insights into the practical issues of building products, systems and services through interdisciplinary projects.

# CSD CURRICULUM

JAN-APR	MAY-AUG	SEP-DEC
<ul style="list-style-type: none"> <li>● Freshmore Subject</li> <li>● Core Subject</li> <li>● Humanities, Arts and Social Sciences (HASS) Subject</li> <li>● Elective</li> <li>● Capstone</li> </ul>	<ul style="list-style-type: none"> <li>■ Y1</li> <li>■ Y2</li> <li>■ Y3</li> <li>■ Y4</li> </ul>	<b>TERM 1</b> <ul style="list-style-type: none"> <li>Modelling &amp; Analysis</li> <li>Physical World</li> <li>Computational Thinking for Design</li> <li>Social Science: Understanding Behaviour, Culture &amp; Society (HASS)</li> </ul>
<b>TERM 2</b> <ul style="list-style-type: none"> <li>Modelling Space &amp; Systems</li> </ul>	<b>TERM 3</b> <ul style="list-style-type: none"> <li>Modelling Uncertainty</li> </ul>	
<ul style="list-style-type: none"> <li>Technological World</li> </ul>	<ul style="list-style-type: none"> <li>Global Humanities: Literature, Philosophy, and Ethics (HASS)</li> </ul>	
<ul style="list-style-type: none"> <li>Science for a Sustainable World</li> </ul>	<ul style="list-style-type: none"> <li>Any Two Electives*</li> </ul>	<b>VACATION</b>
<b>TERM 4</b> <ul style="list-style-type: none"> <li>Design Thinking &amp; Innovation</li> </ul>	<b>TERM 5</b> <ul style="list-style-type: none"> <li>Elements of Software Construction</li> </ul>	
<ul style="list-style-type: none"> <li>Introduction to Information Systems &amp; Programming</li> </ul>	<ul style="list-style-type: none"> <li>Computer System Engineering</li> </ul>	
<ul style="list-style-type: none"> <li>Computation Structures</li> </ul>	<ul style="list-style-type: none"> <li>Elective</li> </ul>	<b>VACATION/INTERNSHIP/EXCHANGE</b>
<ul style="list-style-type: none"> <li>Introduction to Algorithms</li> </ul>		
<ul style="list-style-type: none"> <li>HASS</li> </ul>	<ul style="list-style-type: none"> <li>HASS</li> </ul>	
<b>TERM 6</b> <ul style="list-style-type: none"> <li>Elective</li> </ul>	<b>TERM 7</b> <ul style="list-style-type: none"> <li>Capstone</li> </ul>	
<ul style="list-style-type: none"> <li>Elective</li> </ul>	<ul style="list-style-type: none"> <li>Elective</li> </ul>	
<ul style="list-style-type: none"> <li>Elective</li> </ul>	<ul style="list-style-type: none"> <li>Elective</li> </ul>	
<ul style="list-style-type: none"> <li>HASS</li> </ul>	<ul style="list-style-type: none"> <li>HASS</li> </ul>	
<b>TERM 8</b> <ul style="list-style-type: none"> <li>Capstone</li> </ul>		
<ul style="list-style-type: none"> <li>Elective</li> </ul>		
<ul style="list-style-type: none"> <li>Elective</li> </ul>		
<ul style="list-style-type: none"> <li>HASS</li> </ul>		

- \*Term 3 Electives:
- Science and Technology for Healthcare
  - Data Driven World
  - Designing Energy Systems
  - Spatial Design World
- In addition to all subjects in Term 1 being grade-free (Pass/No Record), students can choose up to four more subjects from Terms 2 and 3 to be grade-free.
- Students will declare their choice of major in Term 3.

## MINOR PROGRAMMES

Our range of minors offers you more choices and flexibility in pursuing your broader interests.

- Minor in Analytics\*
- Minor in Artificial Intelligence (AI)
- Minor in Design Innovation, Ventures and Entrepreneurship (DIVE)
- Minor in Design, Technology and Society (DTS)
- Minor in Digital Humanities (DH)
- Minor in Engineering Product (EP)
- Minor in Engineering Systems (ES)^
- Minor in Healthcare Informatics (HI)
- Minor in Sustainability by Design (SD)

\*For students enrolled from AY2022 onwards.

^For students enrolled before AY2022.

Students will indicate their choice of minor before the start of Term 4. Information is subject to change. Visit [sutd.edu.sg/minors](http://sutd.edu.sg/minors) for latest updates.



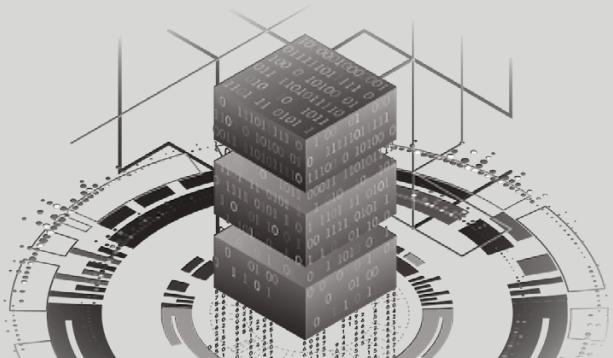
**Joshua Cheong**  
**Digital Innovation Lead,**  
**Assistant Vice President,**  
**Citi Commercial Bank**  
**MPhil in Technology Policy,**  
**University of Cambridge**  
**First Commonwealth Scholar in Innovation**  
**Class of 2015, ISTD Alumnus**

Apart from deep technical skills, at SUTD, **I developed a keen understanding of a universal design methodology that is necessary to tackle large, complex and abstract design problems**. We were trained not to shy away from interdisciplinary problems but to embrace them. It has enabled me to traverse through leading institutions both in business (Citi) and academia (University of Cambridge). It is this **compatibility of SUTD's education with the needs of real businesses** that the SUTD pedagogy shines.



**Aditya Batura**  
**Co-Founder and CEO,**  
**Codomo**  
**Class of 2015, ISTD Alumnus**

Aside from a world-class education in ISTD, **SUTD has unconditionally supported my peers and me in a myriad of unorthodox ventures** - from setting up a beer brewery student club during our first year to converting our final year capstone project into a start-up by **providing industrial and academic expertise in addition to monetary support and incubation facilities**. We owe it all to SUTD!



# FUTURE POSSIBILITIES

## CAREERS

CSD graduates are prepared for a wide range of computing and management careers. Your specialised skills in software design, artificial intelligence, data analytics, security, computer engineering and financial technology makes you a technical leader in both the public and private sectors, such as telecommunications, e-commerce, FinTech, transportation and gaming.

### EXAMPLES OF CSD GRADUATES' JOB TITLES:

- ✖ Cybersecurity specialist/analyst
- ✖ Data analyst/scientist
- ✖ Front-end designer/engineer
- ✖ Full stack engineer/developer
- ✖ Game designer
- ✖ Product manager
- ✖ QA engineer
- ✖ Research officer/engineer
- ✖ Software engineer/developer
- ✖ System consultant



### Citi Singapore

Upon being hired, the SUTD ISTD graduates are first placed in Citi's Technology Analyst programme which provides them with the exposure needed to get a good understanding of the bank. The programme also serves as a feeder into Citi's Next Gen Programme, enabling these employees to continue advancing their expertise in the technological space. We are pleased to note that the graduates **displayed intellectual curiosity, learning agility and resilience**. Coupled with a **passion for digital innovation**, these young professionals **possess the skill sets relevant to the future of banking**.

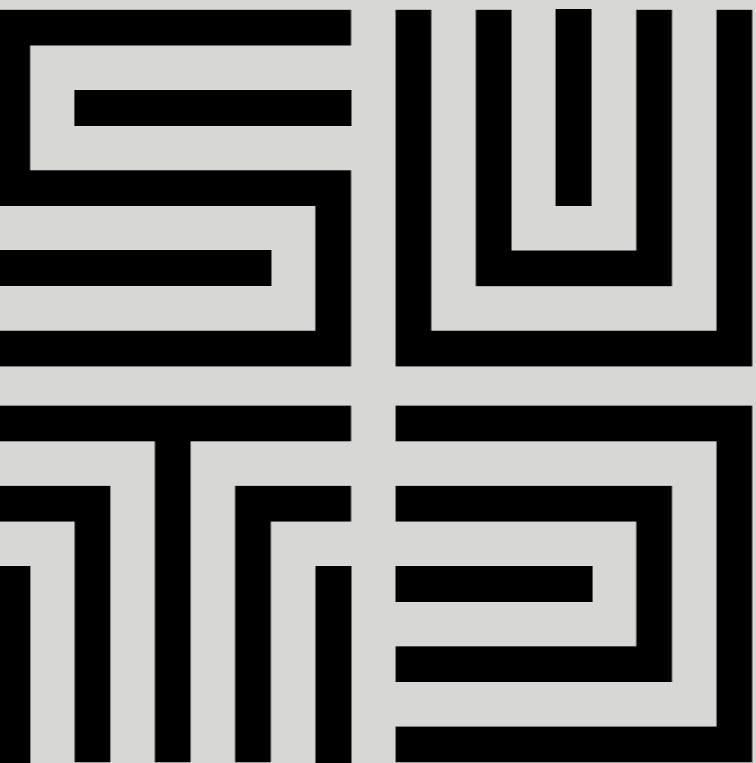


### David Varvel Engineering Director, Pivotal Labs

In our experience, **ISTD graduates have been universally bright, capable, and ready to do complex engineering work**. At Pivotal Labs, we expect our engineers to be able to not only code well, but also be able to teach engineering best practices to the largest and most important organisations in Singapore. We have hired several ISTD graduates, and they **all came in with the theoretical and practical skills to immediately start having a high impact**. An SUTD ISTD degree is one of the first things that we look for when we are hiring.



TRAILBLAZING A BETTER WORLD BY DESIGN.



## ENTREPRENEURSHIP

With a solid background in computing systems, design and technology, a CSD graduate is well-placed to launch start-ups that make a difference.

### START-UPS BY CSD GRADUATES:

- ✖ **Codomo** aims to instil design thinking and computational thinking in children through delightful educational initiatives. The start-up launched Potato Pirates, dubbed the tastiest coding card game, and raised over \$250,000 on Kickstarter.
- ✖ **Beep Technologies** provides a low-cost, unified cashless payment system for vending machines. "Making dumb machines smart", it aims to increase merchants' efficiency without investing in additional hardware. During the Covid-19 pandemic, Beep powered more than 100 vending machines island-wide as part of the Ministry of Health's efforts to distribute free ART kits.
- ✖ **Affable** is an AI-based influencer marketing platform that has successfully raised \$1 million in seed funding. By tapping onto AI and automated technology, Affable allows brands to discover, engage and measure authentic influencers.

## GRADUATE SCHOOL

CSD's rigorous technical training will also prepare you for various post-graduate programmes. Our CSD graduates are enrolled at top universities including:

- ✖ Carnegie Mellon University
- ✖ Columbia University
- ✖ University of Cambridge

PREPARE TO  
TAKE ON  
THE WORLD





## IOT AND INTELLIGENT SYSTEMS

Build large-scale networked and distributed systems, gaining fundamental knowledge to make them effective, scalable and intelligent. Prepares you for careers in the public and private sectors focused towards distributed data centres, automotive solutions, web services and E-commerce solutions among others.



## FINANCIAL TECHNOLOGY

Understand the core challenges in finance and advanced computing technologies to drive the next generation of financial services.



## DATA ANALYTICS

Revolves around three main activities: data capture, data analysis and data exploitation. You will gain the computing skills to develop systems that can extract insights from data and make informed decisions.



## SOFTWARE ENGINEERING

Acquire skills in designing, developing, testing, evaluating and maintaining software systems. Be trained in software engineering principles, programming language concepts and software testing methods.

# SPECIALISATIONS

HAVE THE FLEXIBILITY TO CUSTOMISE YOUR CURRICULUM WITH ONE OR MORE SPECIALISATIONS\*. YOUR SPECIALISATION WILL BE REFLECTED ON YOUR TRANSCRIPT SO THAT EMPLOYERS RECOGNISE YOUR ADDITIONAL EXPERTISE. FIND OUT MORE AT [ISTD.SUTD.EDU.SG/SPECIALISATIONS](http://ISTD.SUTD.EDU.SG/SPECIALISATIONS)

\*Specialisations offered in a given year are subject to change. Choosing a specialisation is optional.



## ARTIFICIAL INTELLIGENCE

Focuses on the fundamental mechanisms that enable the construction of intelligent systems that can operate autonomously, learn from experience, plan their actions and solve complex problems.



## SECURITY

Designed for students who want to develop state-of-the-art knowledge of computer security, network security and cybersecurity technologies.



## VISUAL ANALYTICS AND COMPUTING

Develop systems to handle visual data, mainly images, videos and shapes. Using computers to analyse, acquire, synthesise and render visual data.



## CUSTOM SPECIALISATION

Presents you with the opportunity to be an expert in your field of interest and to best realise your career objectives. With the flexibility to select subjects from CSD and other majors, customise an interdisciplinary curriculum that is firmly grounded in computing around a coherent technical theme.



SINGAPORE UNIVERSITY OF  
TECHNOLOGY AND DESIGN



sutd.edu.sg



For enquiries:  
[sutd.edu.sg/prospectivestudent](http://sutd.edu.sg/prospectivestudent)



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