DESIGN AND ARTIFICIAL INTELLIGENCE
Forging a new concept in design innovation with AI technologies, the Design and Artificial Intelligence (DAI) programme focuses on better design with the help of AI and aims to nurture a new breed of talents with these specific skills. A major focus is on application of AI-driven design across user interface/user experience, products, systems and built environments. From designing smarter medical systems for accurate early disease detection to predicting urban growth patterns to optimise city planning, and safer and more intuitive digital banking services. These are just some of the possibilities of how AI-driven design innovation can transform the economy and improve our lives.

**OVERVIEW**

Design goes beyond aesthetics – it transforms the way we live. The power of design is deeply rooted in understanding the human experience and needs, and then creating innovative products, services and systems to meet and improve them. That’s why forward-thinking companies and nations are investing heavily in design to drive innovation and growth.

DAI students are designers and innovators who harness the power of AI to tackle both present and future challenges, improving design using AI across products, systems, services and the built environment.

Graduate with a Bachelor of Science in Design and Artificial Intelligence.
**DAI Core Subjects**
- Algorithms
- AI Applications in Design
- Product Design Studio
- Machine Learning
- Human Computer Interaction and Design
- Service Design Studio
- Applied Deep Learning
- Spatial Design Studio
- Systems Design Studio

**Learning Outcomes of DAI Core**

**Multi-disciplinary Expertise**
Combine technical expertise in AI with design innovation skills to apply across a range of disciplines, e.g. engineering, healthcare, media, built environment and more.

**Effective AI Deployment**
Increases effectiveness in AI deployment.

**In-depth Knowledge of Design Theories & Practices**
Disrupt economies with your extensive know-how in design theories and practices.

**Varying Composition in Design/Al/Business**
Depending on the chosen electives, you have the flexibility to vary your concentration in Design/Al/Business.

**DAI Curriculum**

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<th>Term</th>
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<td>TERM 1</td>
<td>Modelling &amp; Analysis</td>
<td>Physical World</td>
<td>Computational Thinking for Design</td>
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<td>Global Humanities: Literature, Philosophy &amp; Ethics (HASS)</td>
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<td>Modelling Space &amp; Systems</td>
<td>VACATION/ SUMMER PROGRAMME</td>
<td>Modelling Uncertainty</td>
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<td>Technological World</td>
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<td>Social Science: Understanding Behaviour, Culture &amp; Society (HASS)</td>
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- *Term 3 Electives: Science and Technology for Healthcare Data Driven World Designing Energy Systems Spatial Design World*

**Minor Programmes**

DAI students will have the option to read a Minor, equipping you with additional knowledge and greater flexibility in pursuing broader interests. Some relevant Minor Programmes for DAI students include Minor in Digital Humanities (DH) and Minor in Engineering Systems (ES).

Curriculum is subject to change. Visit [dai.sutd.edu.sg](http://dai.sutd.edu.sg) for updates.
WHY DESIGN?

DRIVES BUSINESS INNOVATION AND GROWTH

The design innovation process improves operational efficiency, adds value and encourages competition as businesses strive to be relevant to market demands.

IMPROVE LIVES

Design is a user-centred innovation process that transforms products, services and experiences, improving lives.

EDB to oversee and support design council’s work from April

Amelia Feng

In a move to help local companies tap design to expand beyond the country, Singapore’s national agency for design – the DesignSingapore Council – will be transferred from the Ministry of Communications and Information to the Economic Development Board (EDB) from April next year.

Announcing the move yesterday, Communications and Information Minister S. Iswaran said design is increasingly important to drive business innovation and growth “against the backdrop of rapid technological advancements and growing customer sophistication”.

Speaking at the Design Education Summit at Parkroyal on Beach Road, he said the change will allow the DesignSingapore Council, which was set up in 2003, to work more closely with the economic agencies under the Ministry of Trade and Industry (MTI), and help different sectors adopt design.

EDB, a statutory board under MTI, will oversee and support the council’s work with industry and also provide business networks to help companies use design.

Mr Mark See, who will continue as the DesignSingapore Council’s executive director, said: “Our mandate to be a champion for the design industry will not change. As part of the EDB family, we will be able to tap its immense industry knowledge and extensive networks even more, to promote the adoption of design in companies.”

The Straits Times | Friday, November 2, 2018

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WHY AI?

IN-DEMAND SECTOR

With 10,000 tech-related jobs expected to be created in the next three years and a new National AI Office to set the agenda for AI, be equipped with future-ready career skills to be highly sought after.

Strategy will position S’pore to...
UNIQUE FEATURES OF DAI

DAI focuses on using AI to “better design” with an emphasis on application-based courses and design studios. By graduation, you would have a comprehensive portfolio of industry-inspired projects.

AI DESIGN INNOVATION STUDIOS
• Make connections between AI and design thinking methodologies
• Diverse exposure to industry sectors, working on real-world data via company-sponsored projects

BUSINESS SUBJECTS
• Understand commercial needs and the importance of value-creation

HUMANITIES, ARTS AND SOCIAL SCIENCES (HASS)
• Drive the understanding for ethics and social responsibility

FLEXIBLE, CUSTOMISABLE CURRICULUM
• Depending on the chosen electives, you will have a varying concentration in Design/AI/Business

be a global leader in AI: Experts

high social and economic impact.

Alibaba Group chief technology officer Jeff Zhang said Singapore’s national AI strategy and its ability to plan and meet national targets have affirmed the e-commerce giant’s decision to work closely with the nation.

Mr Zhang, who is also president of Alibaba Cloud Intelligence, said: “Singapore has consistently demonstrated its foresight and tenacity to fulfill the objectives, as demonstrated in its strong talent base and world-leading research institutions.” These factors, along with its good education system and effective government, stand Singapore in good stead to succeed in the AI space, experts said.

Professor Isaac Ben Israel, director of the Blavatnik Interdisciplinary Cyber Research Centre at Tel Aviv University, said the national strategy will significantly improve the lives of all Singaporeans.

“With the right strategy, AI can transform national-level planning and significantly raise the quality of public goods like transport, education and healthcare, raise productivity, and enable the creation of valuable products and solutions for the Singaporean market and beyond,” said Prof Ben Israel, who is also co-chair of the Israel National Task Force for AI.

What is unique about Singapore’s national AI strategy is that it is grounded in the “human element” that addresses the needs of the country and its people, according to Mr Benjamin Chiang, government and public sector leader at EY Singapore.

“Ultimately, the focus is on improving the lives of citizens and residents through creating value-added jobs and providing quality services that deliver better outcomes and experiences,” he said.

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SUTD launches new degree in AI and design

Joline Ang

Artificial intelligence (AI) technologies can benefit designers, if they know how to harness them.

Statistical data can be used to predict an outcome—a method known as predictive modelling. In urban planning, for example, demand for public transport can be forecast in order to create more efficient public transport deployment plans.

To equip students with such skills, the Singapore University of Technology and Design (SUTD) has launched a new undergraduate degree in Design and AI.

The 3½-year programme—the first of its kind in Singapore—will take in students in the academic year starting in May, SUTD said yesterday.

Students will be exposed to areas of design such as user interface/user experience, product systems, built environment and data-driven design. Graduates from this programme will be able to work as data scientists and data visualisation specialists, in industries such as urban planning, product design and telecommunications, the university said.

SUTD president Chong Tow Chong said: “The recent announcements from Deputy Prime Minister Heng Swee Keat on the next steps in Singapore’s Smart Nation journey underscore the importance of artificial intelligence and the role it will play in bringing about social and economic benefits.

“The main goal of the design and AI programme is to equip students with the ability to create human-centric design using data analysis and machine learning, which is AI-driven.”

Established in 2009, SUTD is the fourth autonomous university in Singapore and focuses on engineering, innovation and design.

In terms of entry requirements, students should generally be competent in mathematics and the sciences. Of the A-level students who were offered places last year, nearly all had taken mathematics at the H2 level, and eight in 10 scored at least a B. Nearly all had also taken either physics or chemistry, or both, at the H2 level, and nearly seven in 10 scored at least a B for either.

Nicholas Pioneer Junior College graduate Michael Hoon, 18, who took both A levels, was reported as saying the programme offered a new dimension to his future studies in mathematics and physics, and also took an H3 physics module offered by Nanyang Technological University, is interested in the new programme.

“I’ve always been interested in math and science since I was young, for the most part because of exposure to school teachers and research on a lot of information online,” he said.

“Both subjects are visibly all around us and pretty much serve as the foundation of our survival and development, and being able to apply and integrate the theoretical modelling we have learnt in our daily lives is pretty interesting too.”

jolinea@spoh.com.sg
SUTD's new DAI programme has a unique course structure that focuses on the design and application of the latest AI technologies to solve problems and improve quality of life. With Singapore's goal of becoming a Smart Nation, design and AI would be an important asset to achieve that goal, especially in digitisation.

Michael Hoon
Jurong Pioneer Junior College Alumnus

DAI is the first university course that combines design and AI. Its versatility creates opportunities to cater to the needs of all sorts of industries in Singapore. Plus, DAI will help us to be proficient with the skills needed to shape and grow the future of these industries.

Soh Yao Hui
Nanyang Polytechnic Alumnus

SUTD’s new programme will equip students with much needed complementary skills in design and AI. This gives them an edge to impact the world.

Dr Terence Hung
Chief of Future Intelligence Technologies, Rolls-Royce

The DAI looks to me an excellent programme to generate the future AI talent for business and consultancy.

Mr Hong Cao
Head of Data Science, Ernst & Young LLP

AI is a new area. Designing AI into a traditional engineering system is often an afterthought. An AI-capable system should incorporate AI into its design at the onset. It will benefit the industry if AI & DI can be fused seamlessly into all AI product designs.

Dr Peh Chin Hwee
Vice President, Head of Intelligent Systems (Robotics & Autonomous, Systems), ST Engineering

SUTD’s DAI degree is relevant in building a pipeline of multi-disciplinary data scientists and AI engineers.

Mr Johnson Poh
Executive Director & Head Enterprise AI, United Overseas Bank

Examples of DAI graduates’ job titles:
- AI solutions architects
- Product/system/service manager
- Product/system/service designer
- User-experience (UX) or user-interface (UI) designer
- Data visualisation specialist
- Business intelligence developer
- Business analyst
- AI engineer

CAREERS
DAI graduates are prepared for a wide range of AI-driven design careers. Your skills in technology and design thinking prepare you for both the private and public sectors, including banking and finance, UI/UX agencies, high-tech firms and more.

SUTD’s DAI programme is designed to prepare students for a wide range of AI-driven design careers. Your skills in technology and design thinking prepare you for both the private and public sectors, including banking and finance, UI/UX agencies, high-tech firms and more.
EXAMPLES OF BETTER DESIGN WITH AI

by SUTD faculty and students

Prediction of Vehicle Activities

Machine learning is used to improve an existing survey to collect mobility data for commercial vehicles. Various temporal, sequential, contextual and environmental features are used for activity prediction.

AI Driven Car Design

The “Flintstone Car” is developed in Fusion 360, a combination of both Computer-Aided Design (CAD) and Computer-Aided Styling (CAS). Evaluate the design from every possible angle, explore possible prototyping options and optimise the design for final fabrication.

Modelling of City Plan Designs

Statistical data can be used to predict an outcome - a method known as predictive modelling. In urban planning, for example, demand for public trains can be forecast in order to create more efficient public transport deployment plans.