

WHY SMU ✨ SCHOOL OF COMPUTING AND INFORMATION SYSTEMS



Creating Our Digital Future

Undergraduate

DEAN'S MESSAGE

Companies and public agencies are employing digital technology to transform their business models and processes. At the School of Computing and Information Systems (SCIS), we seek to create computing knowledge for this digital transformation, and to apply the knowledge in training IT professionals who innovate solutions that create value to business and society.

We offer four undergraduate computing programmes that target different job roles demanded by employers. A common thread through these programmes is our emphasis on designing and building solutions for realistic scenarios, and partnering industry to impart relevant skills to our students.

Our BSc (Information Systems) Information Systems major teaches students to identify emerging technologies and market trends, exploit opportunities to digitally transform an organisation, and develop applications that harmonise with the overall IT infrastructure.

Our BSc (Information Systems) Smart-City Management and Technology major is a unique interdisciplinary programme that trains professionals in blending social, economic, business, environmental and technology concerns to develop smart city solutions.

Our BSc (Computer Science) degree emphasises strong technical skills in translating scientific principles to usable computing technologies and solutions, as well as the management skills needed to navigate complex software development and system deployment concerns.

From 2020, we are partnering with the SMU School of Law to offer a BSc (Computing & Law) degree. This degree equips students with the skillsets to protect technology innovation, comply with pertinent legal and regulatory requirements, as well as manage the technology and business risks posed by innovation.

I am confident that you will find the programmes as exciting as our students and employers do.

Join Computing @ SMU. Equip yourself to create our digital future.

Professor Pang Hwee Hwa
Dean, School of Computing and Information Systems



OUR STUDENTS ARE INDUSTRY-READY



\$4,549

Gross average starting salary for SCIS graduates*



77.7%

SCIS graduates received offers before graduating



97.8%

Overall employment rate as of February 2020

* Source: Graduate Employment Survey 2019. Statistics to be advised.



INDICATIVE GRADE PROFILES

Grade profiles of the 10th and 90th percentiles of Singapore-Cambridge GCE A-level applicants offered places at SMU SCIS in the 2020 University Admissions Exercise.

Degree	Indicative Grade Profile (3H2/1H1) of content-based subjects	
	10th Percentile	90th Percentile
BSc (Information Systems)	BBC/B	AAA/A
BSc (Computer Science)	ABB/A	AAA/A
BSc (Computing and Law)	ABB/A	AAA/A

Polytechnic GPAs of the 10th and 90th percentiles of Polytechnic Applicants offered places at SMU SCIS in the 2020 University Admissions Exercise.

Degree	Indicative Grade Profile (3H2/1H1) of content-based subjects	
	10th Percentile	90th Percentile
BSc (Information Systems)	3.53	3.91
BSc (Computer Science)	3.75	3.97
BSc (Computing and Law)	No indicative GPA is shown as the sample size is small	



FUTURE-READY CAREER SKILLS

Be highly sought after in the job market. Our graduates, with their strong technology, business and people skills, receive multiple job offers before graduation.



WORLD-CLASS FACULTY, LARGE-SCALE RESEARCH

Shape and explore the future of the world in our large-scale technology initiatives supported by substantial R&D grants from the industry and government.



ALIGNMENT WITH NATIONAL INITIATIVES

Take advantage of our close linkages with national agencies and leading industry players for national initiatives such as the Digital Government Blueprint, Smart Nation, Artificial Intelligence, Consumer & Social Insights, Cybersecurity & Data Privacy, and Financial Services Technology. Ministry of Health, Ministry of Trade and Industry, and Singapore Economic Development Board, amongst others.



FAST-TRACK PROGRAMMES

Fast-track your learning and career with our integrated postgraduate programmes that allow you to pursue a SCIS Bachelor's and an integrated Master's degree within a shorter period of time.



HIGHLY COLLABORATIVE LEARNING CULTURE

Enjoy a strong sense of belonging in our school, created through our culture of 'learning-to-learn' and peer support.

WHY SMU SCHOOL OF COMPUTING AND INFORMATION SYSTEMS

INTEREST AREAS

Your Interests are covered by our Programmes



ARTIFICIAL INTELLIGENCE



DATA SCIENCE



INTERNET-OF-THINGS



SOFTWARE ENGINEERING



BUSINESS ANALYTICS



DIGITAL TRANSFORMATION



LAWTECH



TECHNOPRENEURSHIP



CYBERSECURITY



FINTECH

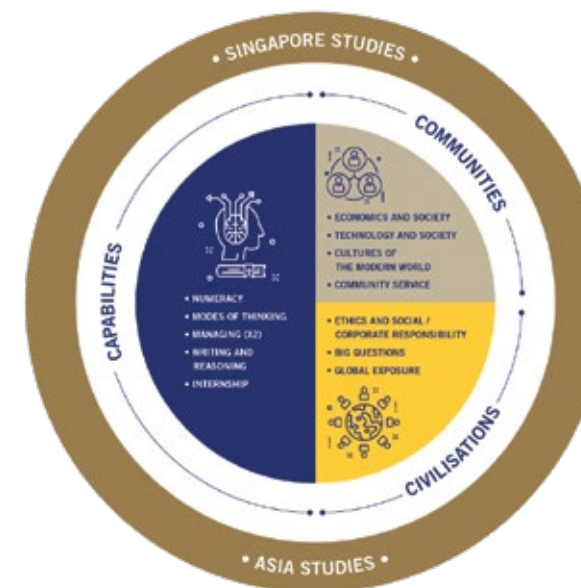


SMART CITIES



The SMU CORE CURRICULUM

The SMU Core Curriculum is a menu of twelve carefully selected course units (CUs) to initiate undergraduates into their journey to become holistic SMU graduates. The Core Curriculum also serves as a means for students across all disciplines to bond through a common intellectual experience. It stands on three pillars of learning, or inter-related paths of development: Capabilities, Communities and Civilisations.



CAPABILITIES

Students will also complete an internship, either locally or overseas.

Develop specific competencies and skills that are necessary to dexterously operate in an increasingly complex, digitised and data-driven working environment.



COMMUNITIES

Students will also complete a community service project, either locally or overseas.

Promote understanding of the economic, technological, and cultural systems that structure our interactions with our communities.



CIVILISATIONS

Students will complete a Global Exposure Experience.

Engage in critical dialogue and problem solving through immersion into fundamental and perennial debates that cut across time and space:

- Happiness & Suffering
- Wealth & Poverty
- War & Peace
- Global & Local

BEING ENGAGED IN LEARNING AND THE GLOBAL COMMUNITY

The vibrant student life at SMU offers a myriad of opportunities for students to develop both leadership and team player qualities. Students can accumulate real-world experiences from being actively involved in student activities, entrepreneurial pursuits, taking on prestigious competitions, and more.



LOCAL & OVERSEAS INTERNSHIP

Broaden your perspectives and apply your skills and knowledge to real-world business operations



OVERSEAS STUDY MISSION

Visit top companies around the world and network with industry leaders for future career opportunities.



PROJECT & RESEARCH EXPERIENCE

Engage with industry leaders and gain valuable hands-on experiences to tackle real-world challenges.



SMU-X

Stay ahead of innovative pedagogy by pushing the boundaries and venturing into new ways of bridging theory and practice.



COMMUNITY SERVICE

Gain exposure to diverse social, political and economic environments as you do your part to advance a humanitarian cause.

NURTURING PROFESSIONALS FOR

DIGITAL BUSINESS TRANSFORMATION

BSc (INFORMATION SYSTEMS): INFORMATION SYSTEMS MAJOR



INFORMATION SYSTEMS TRACKS



BUSINESS ANALYTICS

There is an increasing use of data analytics to discover organisational issues and to drive strategies in digital transformation. This has created a rising demand for our graduates who understand how to use data analytics to solve real world problems. This track aims to provide students with the concepts, methods and best practices of data analytics through working on real-world use cases and practicum.

EXAMPLES OF JOB ROLES

Business Analyst | Business Development Consultant | Business and Product Strategist



FINANCIAL TECHNOLOGY

Singapore is one of the top 5 financial centres in the world, and financial technology professionals are in high demand in the traditional banking sector and in non-bank alternative FinTech companies. This track covers the foundations of enterprise architecture in banking and the functional domain areas such as retail and corporate banking, digital payments and innovations, and financial markets.

EXAMPLES OF JOB ROLES

Account Technology Strategist | Financial Application Developer | Systems Analyst



DIGITALISATION & CLOUD SOLUTIONS

Technological disruption is challenging the future of business process designs and models. This has compelled organisations to take advantage of new technologies to innovate and seamlessly integrate the physical and digital world. This has created new job roles and opportunities. The Digitalisation & Cloud Solutions track enables students to engineer IT solutions to enhance operational excellence, integrate information-processes-people and drive innovation.

EXAMPLES OF JOB ROLES

Enterprise Architect | Software Engineer | User Experience Designer



CURRICULUM FOR ACADEMIC YEAR 2020-21 – INFORMATION SYSTEMS MAJOR



The Information Systems major equips you with the capabilities to create value for business and society by developing innovative IT solutions. It gives you the flexibility to acquire either deep technical skills or a healthy balance of technical and business skills. The programme offers three tracks that students can specialise in: Business Analytics, Digitalisation & Cloud Solutions and Financial Technology.

CORE CURRICULUM

12 Course Units

+

INFORMATION SYSTEMS CORE

12 Course Units

+

INFORMATION SYSTEMS ELECTIVES

6 Course Units

+

FREE ELECTIVES

6 Course Units



INFORMATION SYSTEMS CORE COURSES

SOFTWARE DEVELOPMENT AND MANAGEMENT

Introduction to Programming

Web Application Development I

Web Application Development II

Software Project Management

BUSINESS SOLUTIONING AND MANAGEMENT

Information Systems and Innovation

Business Processes Analysis and Solutioning

Enterprise Solution Management

Enterprise Solution Development

Digital Business - Technology and Transformation

INFORMATION MANAGEMENT

Data Management

Interaction Design and Prototyping

INFORMATION SYSTEMS
PROJECT EXPERIENCE



“The SCIS journey is challenging but you will realise that the interdisciplinary curriculum coupled with rigorous coursework would put you in good stead to excel in your career in the years to come. You will learn to forge ahead with courage and with zeal, to break what seems to be big problems into bite-sized challenges to work on, just as you would in programming. The close-knit community in which we call the SCIS family will mould you into a valuable team player as well as a competent leader where you will thrive in your endeavours in spite of insurmountable odds. Your tenacity to overcome obstacles will instill in you the never-say-die attitude – to learn from adversity, to inspire others to exceed expectations, and to champion those who are committed to excellence.”



Ngho Jun Dat

Manager, Strategic Partnerships, Singtel StepUp
Graduating Class of 2016



SCAN FOR MORE DETAILS

NURTURING PROFESSIONALS FOR

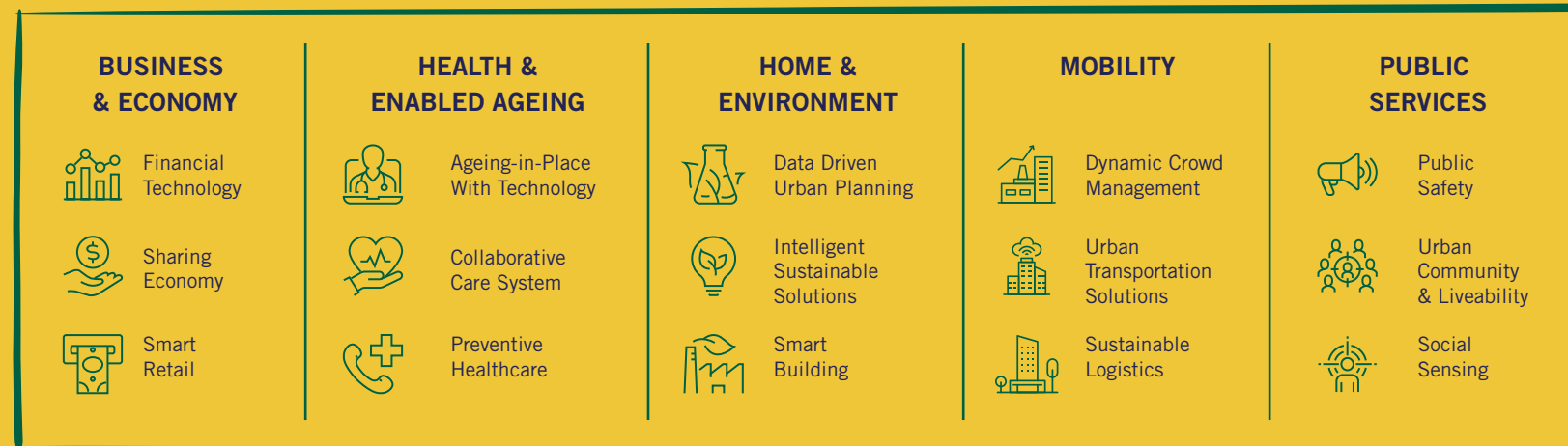
SMART LIVING



BSc (INFORMATION SYSTEMS): SMART-CITY MANAGEMENT & TECHNOLOGY MAJOR



5 KEY SMART CITY DOMAINS



EXAMPLES OF JOB ROLES

Data Scientist | Digital Product Manager | Health Informatics Officer | IoT Solution Architect | Project Management Associate | Smart Systems Analyst | Smart City Partnership Strategist | Sustainable Solutions Designer | Technopreneur | Urban Planner



CURRICULUM FOR ACADEMIC YEAR 2020-21 – SMART-CITY MANAGEMENT & TECHNOLOGY MAJOR



The Smart-City Management & Technology major equips you with interdisciplinary skills across Technology, Social Science and Management. The curriculum focuses on innovating intelligent applications while harnessing data to address business, social, and environmental issues in the context of smart cities.

CORE CURRICULUM 12 Course Units

+

SMART-CITY MANAGEMENT & TECHNOLOGY CORE 12 Course Units

+

SMART-CITY MANAGEMENT & TECHNOLOGY ELECTIVES 6 Course Units

+

FREE ELECTIVES 6 Course Units

SMART-CITY INTERDISCIPLINARY COURSES

3 KEY DISCIPLINES



TECHNOLOGY



SOCIAL SCIENCES



MANAGEMENT

ANALYTICS WITH INTERDISCIPLINARY APPLICATION

- Analytics Foundation
- Analytics Applications for Smart Living
- Data Management
- Geographic Information Systems for Urban Planning

TECHNOLOGY WITH INTERDISCIPLINARY APPLICATION

- Interaction Design and Prototyping
- Introduction to Programming
- Computational Social Science: Principles and Applications
- Foundations of Cybersecurity

SOCIAL SCIENCE + INFORMATION SYSTEMS MANAGEMENT

- Information Systems and Innovation
- Sustainable Digital Cities
- Introduction to Public Policy

SMART-CITY PROJECT EXPERIENCE



"Many countries including Singapore, China, India and Spain are developing smart cities rapidly. This development offers exciting opportunities for enterprising individuals who are able to harness technology to deliver innovative solutions and services to improve the lives of citizens. The BSc (IS): Smart-City Management & Technology is a timely programme which incorporates interdisciplinary knowledge and analytical skills that will produce professionals with the requisite knowledge of public policy & management, social models & psychology, in addition to a solid grounding in IT."



Robert Yap Min Choy
Dean's Fellow of Information Systems
Chairman, Sunseap Group
Chairman, Skylab Holding



SCAN FOR MORE DETAILS

NURTURING PROFESSIONALS FOR

TECHNOLOGICAL INNOVATION

BSc (COMPUTER SCIENCE): IT SOLUTION DEVELOPMENT MAJOR



COMPUTER SCIENCE TRACKS



ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) models aim to augment or substitute human intelligence by building systems that think for themselves and improve over time. This track equips students with core concepts and practical know-how to build innovative AI applications that impact business and society.

EXAMPLES OF JOB ROLES

Chatbot Engineer | Data and AI Solution Architect | Machine Learning Developer



CYBERSECURITY

With the explosion of cyberspace threats, cybersecurity professionals are in high demand world-wide by both the public and private sectors. The Cybersecurity track equips students with cybersecurity theory and practice, covering aspects of security fundamentals in some areas like network, data, and software.

EXAMPLES OF JOB ROLES

Cybersecurity Operations Engineer | Fraud Analyst | Infrastructure Technical Analyst



CYBER-PHYSICAL SYSTEMS

Cyber-Physical Systems (CPS) are typically made up of embedded devices that are able to sense the physical environment, communicate with each other, as well as control physical processes. CPS are widely used in several application domains of smart cities – such as in transportation networks, smart grid systems, smart homes/buildings, healthcare, and manufacturing. This track aims to equip students with core concepts and practical knowledge on designing and implementing CPS for the society. These include topics such as distributed systems, Internet of Things (IoT), and pervasive computing.

EXAMPLES OF JOB ROLES

Consultant - Digital Strategy, Industry 4.0 | IoT Solution Architect | VR-AR Systems Engineer



CURRICULUM FOR ACADEMIC YEAR 2020-21 – IT SOLUTION DEVELOPMENT MAJOR



The Computer Science degree equips you with technical skills to build computing products and solutions to thrive in the marketplaces and society. This requires an understanding of the interplay between computing theory and practice and the essential links between them, as well as fundamental business innovation and IT solution development and management skills.

CORE CURRICULUM 6 Course Units

+

COMPUTER SCIENCE CORE 17 Course Units

+

COMPUTER SCIENCE ELECTIVES 7 Course Units

+

FREE ELECTIVES 6 Course Units



COMPUTER SCIENCE COURSES



SOFTWARE DEVELOPMENT

Programming Fundamentals I 1 CU

Programming Fundamentals II 1 CU

Collaborative Software Development 1 CU

SOLUTION MANAGEMENT

Software Product Management 1 CU

IT Solution Architecture 1 CU

IT Solution Lifecycle Management 1 CU

INFORMATION MANAGEMENT

Data Management 1 CU

Interaction Design and Prototyping 1 CU

COMPUTER SYSTEMS AND ARCHITECTURE

Operating System Concepts with Android 1 CU

Interconnection of Cyber-Physical Systems 1 CU

Computer Hardware and Embedded Systems 1 CU

DISCRETE STRUCTURES AND ALGORITHMS

Linear Algebra for Computing Applications 1 CU

Statistical Thinking for Data Science 1 CU

Mathematical Foundations of Computing 1 CU

Data Structures and Algorithms 1 CU

Design and Analysis of Algorithms 1 CU

COMPUTER SCIENCE PROJECT EXPERIENCE 1 CU

"In my role as Director of Data Science at Microsoft, I see an increasing demand for IT professionals who are adept at fundamental computer science principles, while also being attuned to industry trends. I am excited that the BSc (Computer Science) programme by SMU strives for a balance between technical rigor and business orientation. The awareness of product management as cultivated in the program will also provide a foundation for graduates to fill roles that are in high demand such as Product or Program Manager. In addition, students exposed to software engineering practices combined with artificial intelligence courses will be well prepared for the essential function that data science-related roles will play over the coming years."



Dr. Graham Williams
Director of Data Science,
Microsoft Asia Pacific, Singapore



SCAN FOR MORE DETAILS

NURTURING PROFESSIONALS FOR

DIGITAL LAW AND GOVERNANCE

BSc (COMPUTING & LAW) DEGREE



With a BSc (Computing & Law) degree, graduates can look forward to careers in the following sectors:

BUSINESS & PUBLIC SECTORS

Digital Transformation Consultant

Technology Innovator

Regulatory & Policy Advisor

CONSULTING & FINANCE SECTORS

Technology Strategist

Compliance and IT Auditor

Risk Management Analyst

LEGAL SECTOR

Legal Knowledge Engineer

Legal Tech/Project Manager

Legal Technologist

Lawyers, Legal Advisors Practicing Technology Law

Only applicable to BSc (Computing & Law) with a Fast-Track to Juris Doctor – subject to students meeting the eligibility criteria for enrolment in the Juris Doctor programme offered by SMU School of Law



CURRICULUM FOR ACADEMIC YEAR 2020-21



The Computing and Law degree equips you with skillsets in IT and business innovation, operating IT and business innovations within a legal framework, and employing IT in legal practice. Beyond a solid foundation in computing and law, you will specialise in advanced technology tracks to become future-ready for business and public sectors, consulting and finance sectors, as well as the legal sector.

CORE CURRICULUM 7 Course Units

+

COMPUTING & LAW CORE 18 Course Units

+

COMPUTING & LAW ELECTIVES 8 Course Units

+

FREE ELECTIVES 3 Course Units



COMPUTING & LAW COURSES

COMPUTING CORE COURSES

Statistical Thinking for Data Science 1 CU

Introduction to Programming 1 CU

Data Management 1 CU

Interaction Design and Prototyping 1 CU

Information Systems & Innovation 1 CU

Digital Business - Technology & Transformation 1 CU

Business Process Analysis & Solutioning 1 CU

Software Product Management 1 CU

LAW CORE COURSES

Contract Law 1 1 CU

Contract Law 2 1 CU

Law of Torts 1.5 CU

Criminal Law 1.5 CU

Company Law 1 CU

Intellectual Property Law 1 CU

Privacy and Data Protection Law 1 CU

The Singapore Legal System and Legal Analysis Skills 1 CU

COMPUTING & LAW PROJECT EXPERIENCE 1 CU

"In the past years, what we can do with technology has advanced dramatically while the rules that govern us, as set out by international or domestic laws and regulations, continue to be in flux. This tension between borderless capability and jurisdictional compliance introduces many complexities into business and everyday life. As regional counsel of a global software communications company, I work with such complexities often and my background in information systems is a huge asset that complements my legal expertise. With maturing AI automation and advanced cloud technologies, you will want to have expertise in computing as well as law to prepare for that scary and exciting future."



Ahmad Firdaus Daud

Regional General Counsel for ASEAN and Korea, Avaya Inc
BSc (Information Systems Management), Graduating Class of 2008
SMU Juris Doctor, Graduating Class of 2012



SCAN FOR MORE DETAILS

VERSATILE PATHWAYS

The cross-disciplinary natures of the SCIS undergraduate programmes provide our graduates with a competitive edge in gaining admission into a wide range of top postgraduate programmes.

BSc (INFORMATION SYSTEMS)



First Major in
Information Systems

Second Major Options:
Computing Studies
(Artificial Intelligence, Cybersecurity or
Cyber-Physical Systems Track)

IT Solution Management

Offered by Other Schools Within SMU

BSc (INFORMATION SYSTEMS)



First Major in
Smart-City
Management
& Technology

Second Major Options:
Computing Studies
(Artificial Intelligence, Cybersecurity or
Cyber-Physical Systems Track)

IT Solution Management

Technology for Business Solutions
(Business Analytics, Digitalisation & Cloud
Solutions or Financial Technology Track)

Offered by Other Schools Within SMU

BSc (COMPUTER SCIENCE)



First Major in
IT Solution
Development

Second Major Options:
IT Solution Management

Technology for Business Solutions
(Business Analytics, Digitalisation & Cloud
Solutions or Financial Technology Track)

Offered by Other Schools Within SMU



Degree in
Computing & Law

Second Major Options:
Computing Studies
(Artificial Intelligence, Cybersecurity or Cyber-Physical Systems Track)

IT Solution Management

Technology for Business Solutions
(Business Analytics, Digital Business Solutioning or Financial Technology Track)

Offered by Other Schools Within SMU

BSc (Computing & Law)
**Students can fast-track to
Juris Doctor Programme**
Subject to students meeting
the eligibility criteria for
enrolment in the Juris
Doctor Programme offered
by SMU School of Law.

INTEGRATED POSTGRADUATE PROGRAMMES

SMU-Carnegie Mellon Masters Programme

Options include:

- Master of Science in Information Systems Management
- Master of Science in Information Security Policy and Management

As part of the national strategy to develop talented professionals in the fast changing infocomm industry, this integrated programme is offered through the Singapore Digital (SG:D) Scholarship to outstanding students.

SMU-University College London (UCL)

Outstanding BSc (IS): SMT Students are invited to apply:

- MSc Smart Cities & Urban Analytics

SMU-Master of IT in Business (MITB)*

Tracks include:

- Analytics
- Artificial Intelligence
- Digital Transformation
- Financial Technology and Analytics

SMU-Master of Science in Computing (MScomputing)*

Tracks include:

- Cybersecurity
- Data Science & Engineering
- Software & Cyber-Physical Systems

SCHOLARSHIPS

Whether it is in academics, leadership or commitment to your community, SMU has a range of prestigious scholarships that acknowledge your ability and tenacity.

EXAMPLES OF SCHOLARSHIPS FOR PROSPECTIVE STUDENTS

- ASEAN Undergraduate Scholarship
- Bangkok Bank Scholarship
- CEI Scholarship
- Dato' Kho Hui Meng Scholarship
- de Suantio Scholarship
- Hiew Yoon Khong and Lee Su Chin Scholarship
- Kewalram Chanrai Group Endowed Scholarship
- Lee Kong Chian Scholars' Programme
- Li Ka Shing Endowed Scholarship

- Lim Siah Mong Scholarship
- Ng Kai Wa Scholarship
- Prima Ceylon Scholarship
- Quantedge Foundation Scholarship
- Science & Technology Undergraduate Scholarship
- Shirin Fozdar Scholarship
- Singapore Digital (SG:D) Scholarship
- Sing Lun Scholarship
- SMU Global Impact Scholarship Award
- SMU International Scholarship

- SMU Merit Scholarship Programme
- SMU SCIS Achievements Scholarship
- SMU SCIS Aspirations Scholarship
- SMU Steven Miller Scholarship
- SMU-School of Computing and Information Systems Scholarship
- Tanoto Scholarship
- Yip Pin Xiu Scholarship

RESEARCH HIGHLIGHTS

Secure Mobile Centre hosts the **National Satellite of Excellence in Mobile Systems Security and Cloud Security (NSoE MSS-CS)**, a five-year research initiative (April 2019 - March 2024) sponsored by NRF's National Cybersecurity R&D programme. The centre aims to build a mobile system security and mobile cloud security technology pipeline for smart nation applications.

Applications

Security and privacy of real-time monitoring/decision systems in smart nation

Technologies

- Mobile platform security
- Automatic & continuous user authentication
- Mobile app security
- Mobile cloud security



Robert H. Deng
Director, Secure Mobile Centre
AXA Chair Professor of Cybersecurity
Deputy Dean, Faculty & Research

Living Analytics Research Centre (LARC) is a joint research initiative between Singapore Management University and Carnegie Mellon University. It is a pioneering effort to create ways of understanding consumer and social behaviour by combining advances in computing, social science, and management.

Urban and Social Sensing



Social Media
Listening



Urban Data
Sensing



Crowd-Sensing



Multimodal Data
Integration

Socio-Physical Analytics



Event Detection
& Understanding



Urban Behavior
Analytics



Urban Context
Analytics
(also known as local profiling)



Urban
Knowledge Graphs



Deep Content
Analytics

Social Activation



Personalised
Recommendation



Social
Crowdsourcing



Personalised
Assistance
and Planning



Lim Ee Peng
Director, Living Analytics Research Centre
Lee Kong Chian Professor of Information Systems



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