

Cultivating Knowledge



through Cutting Edge Research

The second of three strategies identified to propel the University towards SMU Vision 2025 is to address societal challenges through cutting-edge research. SMU strives to generate rigorous, high-impact and multi-disciplinary research that addresses Asian issues of global relevance. This research is directed to create meaningful impact in addressing three Strategic Priorities: Digital Transformation; Sustainable Living; and Growth in Asia.



New SMU-A*STAR Joint Lab In Social and Human-Centred Computing to tackle national challenges

SMU and the Agency for Science, Technology and Research (A*STAR) have established a Joint Lab in

Social and Human-Centred Computing. The collaboration strives to build globally competitive research capabilities for Singapore to address people-centric issues in the human health and potential, and the urban solutions and sustainability

domains. With a total investment of \$10 million, the joint lab will build capabilities and develop research outcomes and impactful tools that can be used to support Singapore's public sector and industries.



SMU awarded prestigious AAHRPP re-accreditation

In 2022, SMU was awarded full re-accreditation for five years by the Association for the Accreditation of Human Research Protection Programs (AAHRPP), Inc. This is an achievement that reflects SMU's commitment to conducting high-quality,

ethically conscious research and its reputation as an organisation that can be trusted to protect research participants and produce accurate, trustworthy scientific insights. SMU is the first University in Singapore to be certified by the AAHRPP and the second to be accredited by the AAHRPP as a research organisation.

¹ Caption: Signing the Joint Laboratory Agreement for the establishment and management of the Joint Lab in Social and Human-Centred Computing were (seated, left-right) Professor Archan Misra, Vice Provost (Research), SMU, and Dr Lim Keng Hui, Executive Director, Social Sciences and Technology Horizontal Technology Programme Office and Institute of High Performance Computing, A*STAR. Both are Co-Directors of the SMU-A*STAR Joint Lab in Social and Human-Centred Computing. Witnessing the signing were (standing, left-right) SMU Provost Professor Timothy Clark, Mr Peter Ho, Chairman of the Social Science Research Council, and Professor Andy Hor, Deputy Chief Executive (Research), A*STAR.

GLOBAL ACCOLADES

Prof David Lo receives double recognition

Professor David Lo from the School of Computing and Information Systems (SCIS) has received two recognitions for his contributions to software engineering and data science. He was named an Institute of Electrical and Electronics Engineers (IEEE) Fellow for his contributions to “synergising software engineering and data mining”. Professor Lo was also awarded the 2021 IEEE CS TCSE Distinguished Service Award for his “extensive and outstanding service to the software engineering community in his many roles



in major software engineering conferences and journals”. He is the first in Singapore and second in Asia to have received this prestigious award.



Prof David Chan wins Raymond Katzell Award from SIOP

SMU Professor of Psychology David Chan is the first Singaporean and first Asian to receive the prestigious Raymond Katzell Award from the Society for Industrial and Organizational Psychology (SIOP). The Award is a top honour bestowed on an individual “who, in a major way, has shown to the general public the importance of work done by industrial and organisational psychology for addressing social issues.”

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2 Professor of Computer Science David Lo, Director, Information Systems & Technology Cluster at SMU.

3 Professor David Chan, Lee Kong Chian Professor of Psychology and Director, Behavioural Sciences Initiative (BSI).



SMU faculty and DBA student win Best Paper at APAC Family Business Symposium 2021

The SMU paper “The Role of Value-fit in Family Business Succession: Aligning Incumbent and Successor Perspectives” won the Asia Pacific Family Business Symposium 2021 Naito Best Paper Award, which recognises papers

that demonstrate scholarly rigour, contribute to the field of family business and best fit the conference theme. It was authored by Associate Professor of Organisational Behaviour & Human Resources and Steering Committee Chair, Business Families Institute Tan Hwee Hoon, and SMU Doctor of Business Administration (CKGSB) graduate Zhu Sheng Qin.

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4 SMU Associate Professor of Accounting (Education)
Seow Poh Sun.

SIGNIFICANT PROJECTS



Investigating the Psychology of Consumer-AI Interaction for the Design and Development of AI-based Products and Services

Associate Professor of Marketing Hannah H. Chang was awarded a research grant by the Ministry of Education for research which aims to systematically examine how consumers react towards and interact with AI systems

in marketing contexts, in particular recommendations AI (e.g. digital content curators such as Netflix movie recommendation) and conversational AI (e.g. voice assistants such as Amazon Alexa), across Singapore, China, and the US. Insights from the research can contribute toward driving consumer acceptance and adoption of AI systems in Singapore and beyond.

Robust Design of Institutions: An Implementation Theory Approach

Associate Professor of Economics Takashi Kunimoto's project which focuses on the interaction among individuals that occurs within the framework of an institution received a research grant from the Ministry of Education. For an institution to deliver socially desirable outcomes, the design of the institution has to provide the individuals with the right incentives. Implementation theory is considered a natural framework for us to ensure the correct incentive structure in the design of institutions. The objective of this project



is to design effective – that is, simple and practically usable institutions – by imposing various robustness requirements on the class of institutions to be considered. The project thus aims to

generate critical insights on the robust design of institutions, which would in turn significantly enhance our ability to design effective institutions for economic, political, and social situations.

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Understanding China's Agricultural Modernisation and Rural Development

The development in China's food system (how agriculture production is organised and how urban demand is met) is reshaping the global food system, on which Singapore heavily depends for her food supply. Agricultural and rural change will also powerfully shape the economic development and social stability in China. The Ministry of Education awarded Associate Professor of Sociology Q Forrest Zhang a research grant for this project which aims to understand the profound



changes that are transforming Chinese agriculture and the implications this has for Chinese society and the global food system.



Examining the Impact of Communication Media on the Outcome of Negotiation

This study by Assistant Professor of Law Dorcas Quek Anderson seeks to examine the impact of four communication modes – videoconferencing, audio calls, text messaging, and face-to-face interaction – on negotiation outcomes. In addition, the study explores the potential moderating effects of negotiator traits – such as conflict resolution style, communication style

and personality type – on the media effects on negotiation. The study's findings will cast light on the impact that different media have on diverse aspects of negotiation. This research is timely as general preferences towards communication media could have evolved considerably in the wake of the unprecedented reliance on video-conferencing and development of new technology and media.



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Lifelong Learning for Recommender Systems: Continual, Cross-Domain, and Cross-Platform Approaches

A recommender system presents a personalised experience to each user. One perennial issue affecting

current recommendation technologies is the sparsity of data related to user preferences. The overall objective of this proposed research by Associate Professor of Computer Science Hady W Lauw, who received AI Singapore's 4th Research Programme grant,

is to address this sparsity problem by a combination of approaches that together enable lifelong learning for recommender systems. This is done by allowing the recommendation model to evolve over time to include new users and items and to transfer over to new product categories. In addition, the proposed recommendation model would have the ability to cross from a source platform that accumulates longer-term preferences to a target platform that seeks to integrate short-term signals and reinforcement learning. This provides a system that is able to learn from longer-term preferences and provide the necessary flexibility for cross platform applications.

Technocratic Regionalism in Southeast Asia: The Translational Politics of Smart City Knowledge Transfer

Associate Professor of Geography and Lee Kong Chian Fellow Orlando Woods' project will explore the translational politics of Smart City knowledge transfer, and how such politics manifest in urban environments throughout Southeast Asia. The team defines "translational politics" as the (mis)alignments, tensions and opportunities for exploitation that emerge when different scales of influence converge and materialise within



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a given urban context. The team will explore the emergence of "technocratic regionalism" as a strategy through which

power and inequality are (re) produced at both the macro (global, regional and national) and micro (local) scales.

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GRANT WINS

Date Awarded	School/ ICL	Funding Agency	Project Title
Apr 2021	School of Computing and Information Systems	Mercurics Pte Ltd	Smart Barrier-Free Access (SMARTBFA) v2
Apr 2021	Living Analytics Research Centre	ST Engineering Mission Software & Services Pte Ltd	Actionable Situational Intelligence for Urban Events using Social Media
Apr 2021	School of Computing and Information Systems	IBM Manufacturing Solutions Pte Ltd	Supply Chain Risk Resiliency Project for Supply Assurance/Procurement and Logistics
May 2021	School of Economics	Ministry of Education's Academic Research Fund Tier 2	New Machine Learning Methods with Applications in Forecasting Economic and Financial Variables

Principal Investigator	Project Synopsis
CHENG Shih-Fen	The "SmartBFA 2.0" project aims to build a "Google Maps" equivalent for wheelchair users, so that they can find barrier-free access paths when navigating around Singapore. This objective is in line with Singapore's vision towards building a smart and inclusive city for everyone. A major innovation of our project is the incorporation of crowdsourced sensor inputs; in particular, we aim to solicit multi-modal data collected from a smartphone app to supplement the accessibility information that we have collected using specially-designed sensors. We also seek to collect user feedback, so as to make our system more useful to wheelchair users.
LO Siaw Ling	With its open and broadcasting nature, social media is often the platform to go to when an incident occurs. This study concentrates on urban events, which can be an incident of social disorder or a crisis such as a sudden riot in a city. While prior studies mainly focus on detecting crisis events, this new study goes beyond detection to focus on actionable intelligence and proposes an in-depth analysis of the event including timeline-based situational and emotional changes. The objectives of this study are, 1) develop an approach to extract and analyse actionable situational intelligence from social media, and 2) research on new/novel approaches to summarise key information for interpretation of the results, e.g. relationship of key entities.
LAU Hoong Chuin	This research collaboration with IBM aims to develop the optimisation capabilities to build a cutting-edge resilient supply chain, leveraging data science to preserve the continuity and consistency of product supply and meet business obligations for product delivery and service to customers in the face of both short-term operational and longer-term strategic disruptions. In this project, the team seeks to leverage IBM's relevant internal, supplier-provided, public and subscription data sources to improve operational decision-making capability to proactively anticipate and respond to disruptive events, and to enable resiliency evaluations for products, product families, or tiered supply networks.
YU Jun	Reliable forecasting based on observational evidence is useful in individual and firm decision-making, as well as governmental planning, regulation, and many other activities that rely on future economic projections. For example, central banks need information about a future path of inflation in order to adjust their interest rates. Companies forecast future sales in order to adjust their production. This project sets out to develop three new machine learning (ML) methods that address structural instabilities and nonstationarities that are well known to be present in economic and financial systems and that complicate variable selection and tuning parameter choices. By virtue of their attention to these characteristics, the new methods are expected to outperform traditional econometric methods and existing ML methods and produce more accurate economic and financial forecasting which, in turn, leads to better decisions.

**GRANT WINS
(CONTINUED)**

Date Awarded	School/ ICL	Funding Agency	Project Title
May 2021	School of Economics	Ministry of Education's Academic Research Fund Tier 2	Robust Design of Institutions: An Implementation Theory Approach
May 2021	School of Computing and Information Systems	Ministry of Education's Academic Research Fund Tier 2	Improving Fairness and Accessibility of Crowd Work
May 2021	Lien Centre for Social Innovation	Dementia Association (formerly Alzheimer's Disease Association)	Voice for Hope Programme Evaluation
Jul 2021	School of Computing and Information Systems	National Satellite of Excellence - Mobile System Security and Cloud Security's Research Programme RFP	ADrone: Auditing Drone Behaviours for Accountability of Criminal/ Malicious Activities

Principal Investigator	Project Synopsis
KUNIMOTO Takashi	<p>This project focuses on the interaction among individuals that occurs within the framework of an institution. For an institution to deliver socially desirable outcomes, the design of the institution has to provide the individuals with the right incentives. Implementation theory is considered a natural framework for us to ensure the correct incentive structure in the design of institutions. The objective of this project is to design effective – that is, simple and practically usable – institutions, by imposing various robustness requirements on the class of institutions to be considered. The project thus aims to generate critical insights on the robust design of institutions, which would in turn significantly enhance our ability to design effective institutions for economic, political, and social situations.</p>
HARA Kotaro	<p>In this Human-Computer Interaction research, the research team will design a novel system that addresses the low wage of online crowd work — also known as online gig-economy. By using knowledge from mechanism design in the economics literature, the research team will design and develop user interfaces through machine-learning models that:</p> <ol style="list-style-type: none"> 1. Present information to encourage crowdsourcing requesters to pay a fairer wage to online workers; and 2. Use nudging messages and information visualisation to persuade workers to submit high-quality work.
Dilum WEWALAARACHCHI	<p>The first objective of this programme evaluation endeavour is to produce a “Roadmap Report” that will aid Alzheimer’s Disease Association (ADA)’s efforts to improve subsequent iterations of the Voice for Hope (VFH) programme. The second objective of this research study is to co-create an “Amplification Article” with collaborators at ADA, with the goal of sharing valuable insights from the VFH programme in Singapore with the larger ecosystem in Asia and beyond. This effort will allow for the curation of further evidence-based programmes that benefit persons with dementia and their caregivers in the future.</p>
SHAR Lwin Khin	<p>With the widespread adoption of drones in civilian, business, and government applications nowadays, concerns for breaches of safety, security, and privacy by exploiting drone systems are also rising to the highest national level. Malicious entities have used drones to conduct physical and cyber-attacks such as unauthorised surveillance, drug smuggling, armed use, etc. In this project, the research team aims to develop methods and tools for analysing a list of drones and to audit drones for detecting anomalies such as malware, data leak, software bugs that could be exploited to conduct criminal/malicious drone activities. The research team will analyse at least five different drone-related criminal/malicious activities from their collaborator and demonstrate how ADrone can assist drone forensic analysts with the detection of the root causes of activities.</p>

**GRANT WINS
(CONTINUED)**

Date Awarded	School/ ICL	Funding Agency	Project Title
Jul 2021	School of Computing and Information Systems	Huawei International Pte Ltd	Attribute-based Authentication and Authorisation Technologies
Jul 2021	Research Lab for Intelligent Software Engineering	Huawei International Pte Ltd	On the Runtime Verification of Trustworthy Deep Learning Systems
Aug 2021	School of Computing and Information Systems	Fujitsu Laboratories Ltd	Enhancing Digital Annealer
Aug 2021	Yong Pung How School of Law	Tax Academy of Singapore	Taxation of Digital Tokens in Singapore

Principal Investigator	Project Synopsis
Robert Deng	The world is experiencing a rapid transition towards a digital society. Although a huge number of Internet of Things (IoT) devices are being deployed to provide accurate and real-time sensing and observation of the environment, security and privacy concerns are becoming one of the major barriers for large-scale adoption and deployment of IoT. To that end, this project aims to provide IoT devices with privacy-aware authentication and flexible authorisation capabilities to build trust in IoT.
SUN Jun	This project aims to develop a practical method for certifying real-world AI-based systems based on a novel combination of static and dynamic verification, targeting systems with a certification requirement similar to that of EAL6-7 for traditional software systems. We accomplish this by developing a completely new set of algorithms, which are designed to battle the scalability limitation of static verification techniques and connect static and dynamic verification, and use the partial verification engine developed to solve the verification problem systematically.
LAU Hoong Chuin	<i>(This is a 6-month extension of the research collaboration with Fujitsu Ltd.)</i> Under the Fujitsu-SMU Urban Computing and Engineering (UNiCEN) Corp Lab, SMU has undertaken the Digital Platform Experimentation (DigiPlex) project with Fujitsu. The project was carried out using the Digital Annealer (DA), a quantum inspired-technology inspired by Fujitsu. Through the DigiPlex project, certain challenges in solving constrained optimisation problems using such technology, and promising methods on tuning of the underlying model parameters to improve run time performance, have been identified. This project aims at developing hyper parameter tuning methodology, machine-learning techniques, operations research algorithms, and software tools to enhance quantum-inspired techniques for solving large scale real-world combinatorial optimisation problems.
Vincent OOI	The increasingly widespread use of digital tokens around the world has meant that businesses have been seeking clarity with respect to their tax liabilities from transactions involving digital tokens. However, as such transactions are relatively new, there is considerable uncertainty as to the appropriate tax treatment in what can be a rather messy field. Singapore has provided comprehensive guidance on the taxation of digital tokens in the form of e-tax guides. However, quite understandably, a good number of open questions still remain. This project aims to add to the available knowledge on the taxation of digital tokens in Singapore by providing a single comprehensive guide that can be easily referenced by businesses seeking clarity on their tax obligations. In particular, it will add value by looking at four areas that are not currently covered by the existing guidance and literature: 1) a clear theoretical map of the area; 2) the application of existing law (case law and statutes) to these new transactions; 3) a comparative approach, to determine how the tax treatment in Singapore differs from that of other leading jurisdictions; and 4) the stamp duty implications of transactions involving digital tokens. In addition, the project will cover the three most relevant taxes in this area: 1) income tax; 2) goods and services tax; and 3) stamp duties.

**GRANT WINS
(CONTINUED)**

Date Awarded	School/ ICL	Funding Agency	Project Title
Aug 2021	School of Computing and Information Systems	Alibaba DAMO Academy (Hangzhou) Technology Co Ltd's 2020 Alibaba Innovative Research Programme	Task-Specific Data Augmentation in Class-Incremental Learning Systems
Aug 2021	Lee Kong Chian School of Business	Ministry of Education's Academic Research Fund Tier 2	Fostering Change in Our Foodways: The Perception and Acceptance of Alternative Proteins Among Consumers in Singapore
Aug 2021	School of Computing and Information Systems	Ministry of Education's Academic Research Fund Tier 2	PERFLEXO: a PERSONalized, FLEXible, and controlled Output-size framework for multi-objective preference queries in large databases

Principal Investigator**Project Synopsis****SUN Qianru**

AI models trained offline rely on the accessibility of all classes in training data. When they are updated online to learn new incoming data, they often bias to the patterns of new classes, and thus forget old ones. The problem is known as catastrophic forgetting. This project aims to tackle this issue by task-specific data augmentation. The augmentation for old classes is achieved by distilling from new or open-set data that contain the knowledge of old classes, e.g. shared contexts and sub-parts.

Mark CHONG

This research project aims to improve understanding of Singapore consumers' perception of alternative protein and subsequently, foster their acceptance of this novel food technology. The term "alternative proteins" refers to animal-free protein alternatives that can be organised into three distinct categories: "plant-based proteins, edible insects, and a group referred to as "cellular agriculture". This latter group encompasses products commonly referred to as "cultured" or "clean" meat, milk and other animal products, created either through culturing stem cells outside animal bodies (in vitro), or through the genetic modification and fermentation of yeast cells. More specifically, this study aims to answer the following research questions:

1. What are Singapore consumers' perception of alternative proteins?
2. What message frames are most effective in fostering consumers' acceptance of alternative proteins?
3. Which type(s) of social media influencers (SMI) are most effective in influencing consumer acceptance of alternative proteins?
4. What are the effects of the message frames on Singapore consumers' attitudes and behavioural intentions (or behaviour) in relation to alternative proteins?

Kyriakos MOURATIDIS

With the advent of e-commerce, users are presented with numerous alternatives to satisfy their everyday needs. Choosing from the available options generally entails the consideration of multiple, often conflicting aspects, the tradeoff among which is assessed differently by different users. This project proposes PERFLEXO, a new methodology for multi-objective querying centred around three hard requirements, i.e. personalisation, flexibility in the preference input, and output-size control. Past approaches have considered these requirements individually, but no existing work satisfies all three of them. On the technical side, the main contributions of the project will centre on PERFLEXO's ability to process large option-sets (i.e. scalability) and produce shortlists in reasonable time (i.e. responsiveness).

**GRANT WINS
(CONTINUED)**

Date Awarded	School/ ICL	Funding Agency	Project Title
Aug 2021	School of Social Sciences	Spencer Foundation's Small Research Grants	When Access is Not Enough: How Chronic Stress Affects Psychological Well-Being And Persistence Among Socioeconomically Disadvantaged University Students
Aug 2021	Centre for Commercial Law in Asia	INSOL International, through University of South Australia	A Cross-jurisdictional Comparison of the Use of Commercial Litigation Funding in Insolvency
Sep 2021	Centre for AI & Data Governance	Facebook, Inc. through Technical University of Munich	Rule of Law, Legitimacy and Effective COVID-19 Control Technologies
Oct 2021	Centre for Research on Successful Ageing	Ministry of Health's Healthy Longevity Catalyst Awards	Community Based and Participant-led Initiatives to Increase Civic Engagement Among Older Adults

Principal Investigator	Project Synopsis
Jacinth TAN	<p>Equitable access is an important means of reducing socioeconomic status (SES) gaps in higher education. However, even in countries with universal access to education, high-SES individuals were still more likely to complete tertiary education than low-SES individuals. This project investigates why socioeconomic gaps continue to emerge even with lower economic barriers to higher education. We propose that low-SES students may experience higher levels of chronic stress and respond more negatively to stress in highly competitive university environments than high-SES students. We also propose to examine if the negative effect of chronic stress may further impact low-SES students' cognitive capacity, academic performance, persistence, and general outlook on academic success. Overall, this project will potentially highlight the multiple challenges faced by low-SES students as they strive for social mobility, and underscore the need to address any potential psychological disadvantage encountered by low-SES students in higher-education settings.</p>
Aurelio GURREA MARTINEZ (collaborator)	<p>This project aims to provide a cross-jurisdictional comparison of the way in and extent to which commercial litigation funding is used in the insolvency context in Australia, England, Ireland, Canada, New Zealand, Singapore, the Netherlands, Germany, USA and South Africa.</p>
Mark FINDLAY	<p>The project will provide state-of-the-art guidance for ensuring that research and innovation using technological applications for controlling COVID-19 is legally compliant, in so far as these present challenges to rights and liberties. Focusing on AI-assisted technology, the research will address COVID-19 control strategies in the pandemic and post-pandemic phases.</p>
STRAUGHAN Paulin	<p>This proposal adopts an asset-based approach to enabling civic engagement among older adults in Singapore by positioning them as both the drivers and beneficiaries of ground-up initiatives aimed at keeping older adults integrated in their communities. It is hypothesised that such an intervention will improve overall well-being for older adults based on findings from the Singapore Life Panel® (SLP). A pilot programme is proposed to assess the efficacy of such an approach: 50 older adult residents of an estate will participate by developing and implementing various initiatives in their community under the broad themes of "rediscovering Singapore", "cultural exchanges", "volunteering", "physical activities" and "collective purchasing initiatives". The themes are targeted at specific quadrants of well-being (economic, social, psychological, and physical). The team will conduct pre- and post-intervention surveys to track the overall well-being. If successful, the project will be proposed to be run in additional neighbourhoods. The particular intervention model can be easily replicated in different communities across Singapore, largely due to the fact that it is a community-driven initiative and can be easily adapted.</p>

**GRANT WINS
(CONTINUED)**

Date Awarded	School/ ICL	Funding Agency	Project Title
Dec 2021	School of Social Sciences	National Research Foundation	SPACE: Shaping Public Adaptive Capacity for Environmental Infectious Diseases
Dec 2021	School of Computing and Information Systems	AI Singapore's 100 Experiments Programme	On Demand Delivery Assignment Recommender
Jan 2022	School of Economics	International Growth Centre	Economics and Welfare Impact of Dhaka Mass Rapid Transit System (Metro Rail)

Principal Investigator	Project Synopsis
MUKHERJEE Ishani	<p>Many experts agree that even if populations can be immunised against particular viruses using drugs or vaccines, they must be prepared to live with infectious diseases because of the interrelations between infection agents and climate change. The management of epidemics therefore requires a paradigmatic shift in disease control. To achieve sustainable responses to health challenges, it is critical that local communities and urban stakeholders be regarded as active players in the production of knowledge, surveillance, and responses to epidemics. The SPACE project builds on this premise to develop a dynamic, adaptive approach to urban sustainability. The project draws upon analyses of the risk factors and sociospatial patterns that drive dengue transmission in Singapore, as well as the social and technical skills developed by individuals, community groups and state actors in response to disease propagation. The project will use the concept of “adaptive capacity” (AC) to explore the potential of community-based “latent social capital” as key assets for adaptive responses to health challenges related to dengue in its interplay with COVID-19 in the context of Singapore’s Smart Nation initiative. Based on the AC approach, the project targets four outcomes: a) improve the current spatiotemporal forecasting framework for dengue and COVID-19 outbreaks in Singapore using an Agent-Based Model; b) develop innovative policy ideas to enhance disease prevention and mitigation in Singapore’s built and green space; c) improve governmental communication strategies towards epidemic mitigation and control, and; d) assist in reshaping or building urban configurations at various scales so as to achieve an “antivirus-built environment”.</p>
LAU Hoong Chuin	<p>This is a project under the AI Singapore 100 Experiments Programme. It tackles the research challenge of generating good logistics plans and schedules for parcel delivery using AI. uParcel faces the challenges that the number of deliveries daily are in the thousands and the number of drivers delivering a day is in hundreds, which makes it very challenging to match jobs to drivers and encourage job acceptance. Using reinforcement learning coupled with large-scale optimisation methods, the research team will develop route optimisation, dynamic recommendation, and logistics marketplace matching algorithms for improving operational efficiency. This will also greatly improve city logistics by reducing trips and congestion.</p>
Tomoki FUJII	<p>This project aims to explore the implications of Dhaka’s upcoming mass rapid transit (MRT) system and first line, MRT-6, on the distribution of socioeconomic activity and mobility within the city. Even though large-scale mass transit projects like the MRT system affect travel conditions in the entire city and are important for sustainable development, a comprehensive assessment of an infrastructure project is rarely undertaken. Data such as simulated and actual trips, property prices, and job availability will be collected both before and after the start of the line, as well as within and outside the areas directly affected by MRT-6. Analysis involving recent advances in econometric and spatial-modelling techniques will be conducted to estimate the general equilibrium impacts of MRT-6 and understand the distribution of welfare gains across space and different socioeconomic groups, as well as the channels through which these gains transpire.</p>

**GRANT WINS
(CONTINUED)**

Date Awarded	School/ ICL	Funding Agency	Project Title
Jan 2022	Centre For Research On Successful Ageing	Agency for Integrated Care	Understanding Emerging Trends of Care Communities for Singapore Residents Aged 50-76
Feb 2022	Yong Pung How School of Law	Ministry of Education's Academic Research Fund Tier 2	Examining the Impact of Communication Media on the Outcome of Negotiation
Feb 2022	School of Social Sciences	Ministry of Education's Academic Research Fund Tier 2	Understanding China's Agricultural Modernization and Rural Development
Feb 2022	Office of Core Curriculum	Ministry of Education's Academic Research Fund Tier 2	Technocratic Regionalism in Southeast Asia: The Translational Politics of Smart City Knowledge Transfer
Feb 2022	Lee Kong Chian School of Business	Ministry of Education's Academic Research Fund Tier 2	Investigating the Psychology of Consumer-AI Interaction for the Design and Development of AI-based Products and Services
Feb 2022	Yong Pung How School of Law	The Korea Foundation	Enhancing the ASEAN-Korea Strategic Partnership in New Asian Regionalism

Principal Investigator	Project Synopsis
STRAUGHAN Paulin	This project aims to study how better care options can be provided and developed for the local community. The first study will centre around the awareness and preferences of Singapore residents aged 50-76 regarding Assisted Living, with a set of survey questions to be designed and fielded through the Singapore Life Panel. Other focus areas will be developed over the course of this 2-year collaboration based on up-and-coming topics as they emerge.
QUEK ANDERSON, Dorcas	This study seeks to examine the impact of four communication modes – videoconferencing, audio call, text messaging, and face-to-face interaction – on negotiation outcomes. In addition, the study explores the potential moderating effects of negotiator traits – such as conflict resolution style, communication style and personality type – on the media effects on negotiation. The study's findings will cast light on the impact that different media have on diverse aspects of negotiation. This research is timely as general preferences towards communication media could have evolved considerably in the wake of the unprecedented reliance on videoconferencing and development of new technology and media.
ZHANG Qian Forrest	The development in China's food system (how agricultural production is organised and how urban demand is met) is reshaping the global food system, on which Singapore heavily depends for her food supply. Agricultural and rural change will also powerfully shape economic development and social stability in China. This project aims to understand the profound changes that are transforming Chinese agriculture and the implications this has for Chinese society and the global food system.
WOODS Orlando	This project will explore the translational politics of Smart City knowledge transfer, and how these politics manifest in urban environments throughout Southeast Asia. We define "translational politics" as the (mis)alignments, tensions and opportunities for exploitation that emerge when different scales of influence converge and materialise within a given urban context. We will explore the emergence of "technocratic regionalism" as a strategy through which power and inequality are (re)produced at both the macro (global, regional and national) and micro (local) scales.
CHANG Han-Wen Hannah	The proposed research aims to systematically examine how consumers react toward and interact with AI systems in marketing contexts, in particular recommendations AI (e.g. digital content curators such as Netflix movie recommendation) and conversational AI (e.g. voice assistants such as Amazon Alexa), across Singapore, China, and the United States. Insights from the research can contribute toward driving consumer acceptance and adoption of AI systems in Singapore and beyond.
HSIEH Li-Tian	This project aims to fill the gap in Asian regionalism and international economic law and policy, through exploring the legal evolution of the ASEAN-Korea trade and investment agreements in light of the ASEAN-Korea Strategic Partnership and Korea's New Southern Policy, the ASEAN Economic Community Blueprint 2025, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership and the Regional Comprehensive Economic Partnership.

**GRANT WINS
(CONTINUED)**

Date Awarded	School/ ICL	Funding Agency	Project Title
Mar 2022	School of Computing and Information Systems	Quantum Engineering Programme	Quantum-Enhanced Modelling of Financial Time-Series Data for Rare Event Forecasting
Mar 2022	School of Social Sciences	Ministry of Sustainability and the Environment	Public Cleanliness Satisfaction Survey
Mar 2022	Lee Kong Chian School of Business	Ministry of Education's Tertiary Education Research Fund	From Suffering to Flourishing: Toward a Synthesis of Mindfulness Practice and Positive Psychology in Tertiary Education
Mar 2022	School of Computing and Information Systems	Ministry of Education's Tertiary Education Research Fund	AP-Coach: AI-based Formative Feedback Generation to Improve Student Learning Outcomes in Introductory Programming Courses
Mar 2022	School of Computing and Information Systems	Ministry of Education's Tertiary Education Research Fund	Slide++: Automatic Augmentation of Academic Slides Towards AI-Enabled Student-Centred Learning

Principal Investigator	Project Synopsis
GRIFFIN Paul Robert (Co-Principal Investigator)	<p>Rare events, also known as “black swans”, in financial time series can be seen as sporadic and drastic jumps in financial assets returns. Accurate and timely estimates of future risk associated with rare events are of great importance for finance practitioners, policymakers, and regulators. The research team will leverage the most recent developments in quantum-enhanced Monte-Carlo sampling, stochastic modelling and dimensional reduction to design a set of quantum algorithms for rare event estimation that:</p> <ol style="list-style-type: none"> 1. Enhance the accuracy in estimating the probability of specific rare events – we anticipate a quadratic scaling improvement, where doubling the iterations for the quantum algorithm will result in an accuracy improvement equivalent to a quadrupling of iterations in its classical counterpart. 2. Reduce systematic error caused by dimensional reduction – when constrained to storing the same amount of past data (e.g. macroeconomic indicators), our quantum model can give more accurate rare-event predictions than classical counterparts.
STRAUGHAN Paulin	<p>MSE and SMU are collaborating to conduct the Public Cleanliness Satisfaction Survey (PCSS), an annual national household survey that aims to measure and track Singaporeans’ satisfaction and perceptions towards public cleanliness and public hygiene. Findings from the survey will aid in identifying key areas of concern and recommendations which are policy or operational in nature, to improve the public’s levels of satisfaction of public cleanliness, public hygiene and/or public cleaning services.</p>
REB Jochen Matthias	<p>This project aims to create a 13-week undergraduate elective module to help final-year students achieve one of the graduate learning outcomes of Singapore Management University (SMU): “personal mastery” as a driver of holistic learning in pursuit of both personal and collective well-being. This project will translate the existing programme “Mindfulness-based Strategic Awareness Training” for working professionals into the context of tertiary education. Expanding this programme to incorporate academic discussion and group work, the course will be the first tertiary-level intervention to combine mindfulness practice with positive psychology to help participants move from suffering to flourishing.</p>
TA Nguyen Binh Duong	<p>This project aims to build an Automatic Programming Coaching system that is based on a combination of AI and software engineering techniques to support students in practising coding via formative feedback generation.</p>
LAUW Hady Wirawan	<p>This research is an ideation/proof-of-concept project to develop an interactive Web application, called Slide++, which allows students to self-explore additional content related to their courses, while still being directed by the lesson materials provided by an instructor. More importantly, its primary feature is to provide content augmentation for every slide in the form of learning resources relevant to the slide being viewed. These resources can be of various modalities, including Web pages, videos, or questions and answers Q&As.</p>

GRANT WINS (CONTINUED)

Date Awarded	School/ ICL	Funding Agency	Project Title
Mar 2022	School of Computing and Information Systems	AI Singapore's 4 th Research Programme	Lifelong Learning for Recommender Systems: Continual, Cross-Domain, and Cross-Platform Approaches
Mar 2022	Yong Pung How School of Law	Singapore Judicial College's Empirical Judicial Research	An Empirical Study on Judgment Writing in Singapore

OTHER RESEARCH AND THOUGHT LEADERSHIP

ROSA research on older adults' preparedness for living with endemic COVID-19

The 2021 study, "Older Adult Preparedness for Living with Endemic COVID-19" by SMU Centre for Research on Successful Ageing (ROSA) revealed that nearly a third of Singapore's older adults did not feel mentally prepared for living with COVID-19 as an endemic. Findings from the study suggest that the level of trust that older adults have in the government significantly shapes the level of perceived infection and mortality risk from COVID-19. ROSA's research seeks to define and measure a holistic construct of well-being and to identify the factors that impact Singaporeans' well-being as they progress through the later phases of life.

Principal Investigator**Project Synopsis****LAUW Hady Wirawan**

A recommender system presents a personalised experience to each user. One perennial issue affecting current recommendation technologies is the sparsity of data related to user preferences. The overall objective of this proposed research is to address this sparsity problem by a combination of approaches that together enable lifelong learning for recommender systems. This is done by allowing the recommendation model to evolve over time to include or to adapt to new users and items and to transfer over to new product categories. In addition, the proposed recommendation model would have the ability to cross from a source platform that accumulates longer-term preferences to a target platform that seeks to integrate short-term signals and reinforcement learning. This provides a system that is able to learn from longer-term preferences and provide the necessary flexibility for cross-platform applications.

LIM How Khang

The objective of the study is to design automated metrics for evaluating the clarity and readability of judgments and to empirically evaluate how well the judgments written by Singapore judges perform on those measures. Having the ability to define and evaluate judgments on these measures can assist judgment writers (judges and judicial law clerks) to draft clearer and more readable judgments.

BFI@SMU research report on external asset management

A first of its kind, "The Growing Ecosystem of Wealth Management in Singapore: Lenses on the External Asset Manager" report aims to deepen the knowledge and skills of the asset-management industry, and enhance the service and support that investment managers can provide to their family business clients in Asia. The report is part of a series of thought leadership pieces on emerging investment strategies of business families targeted at building capabilities for the external asset-management industry in Singapore. It was developed by the SMU Business Families Institute, which was established in 2012 to help business families build sustainable, impactful enterprises across generations.

Prof Paulin Straughan speaks at Renmin U Forum

SMU Dean of Students Professor Paulin Straughan shared how SMU builds resilience in its students at the 2021 Forum on Education, Women and Sustainable Development. Organised by the Renmin University of China and the China Education Association for International Exchange, the annual forum focused on the evolving role of higher-education institutions in female students' empowerment and growth.