

# ADVANCING KNOWLEDGE, DRIVING CHANGE



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research  
focus areas

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research  
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million downloads from  
SMU's institutional  
repository, InK

# CUTTING EDGE RESEARCH

## Pioneering Solutions for a Dynamic World

Over the last 24 years, SMU has been leading the charge in innovative research, turning bold ideas into actionable solutions. From Singapore, the strategic hub of Asia, SMU applies its knowledge and global perspective in an Asian context to bridge concepts and provide critical insights. SMU research aims to create significant impact by addressing societal challenges within three key focus areas: Digital Transformation, Sustainable Living and Growth in Asia.



(L-R): Prof Orlando Woods, Director of SMU Urban Institute; Prof Timothy Clark, SMU Provost; Mr Piyush Gupta, SMU Chairman; Ms Sim Ann, Senior Minister of State for Foreign Affairs and National Development; Prof Lily Kong, SMU President; Prof Archan Misra, SMU Vice Provost (Research).

### New Urban Institute sets the standard for studying Asian cities

The University launched the Urban Institute (UI) to address critical issues in infrastructure, development, and lifestyle experienced by rapidly urbanising Asian cities. In particular, the UI aims to explore socio-cultural aspects of urbanisation and the balance between growth and sustainability. This new research endeavour highlights the need for interdisciplinary studies to solve the challenges of fast-growing cities and build more inclusive, sustainable urban communities in Asia.

### Conceptualising and implementing SMU data stacks initiative



Participants in an SMU seminar featuring guest speakers from the Singapore Ministry of Health's TRUST team.

Through the Data Stacks Initiative, SMU aims to curate a comprehensive data library in its areas of research focus; both for Singapore and for other Asian cities where it has research partners. Using the Singapore Ministry of Health's enTRUST/TRUST platforms developed by the Government Technology Agency (GovTech), SMU will collaborate with government and industry

partners to merge the data that SMU and its research partners bring together. This merged, de-identified data will be used for research. These data stacks curated by SMU and its research partners will empower its faculty to engage in impactful, data-driven research in collaboration with government agencies, research institutions, and industry partners globally.



## Global Accolades

### Professor Lily Kong honoured with Royal Geographical Society Victoria Medal



SMU President Prof Lily Kong

In a landmark achievement for SMU, President Professor Lily Kong has received the Royal Geographical Society Victoria Medal 2024. This honour acknowledges her exceptional contributions to social and cultural geography and urban research. She is the first Asian woman to receive this award since its inception in 1902. In her research journey, Prof Kong has studied wide-ranging phenomena: intercommunal relations, identities and social cohesion; cultural politics, cultural policies and cultural industries; creative economies, creative cities, and smart cities; natural and cultural heritages; and more. In particular, she has given much attention to understanding the interconnections that underpin social-cultural transformation in Asia.

### SMU's first ACM Fellow Professor David Lo



Prof David Lo

As advancements in artificial intelligence and software engineering continue to shape our future, it is essential to highlight those who push the boundaries. SMU OUB Chair Professor of Computer Science David Lo has been honoured as a 2023 Association for Computing Machinery Fellow, becoming the first from SMU and the fourth in Singapore to receive this accolade. He joins a prestigious group known for their transformative contributions to computing, alongside pioneers like Tim Berners-Lee — the inventor of the World Wide Web. It highlights his work in synergising artificial intelligence and software engineering for human-in-the-loop automation and software analytics.

### Professor Sun Sun Lim lauded as tech leader

Vice President, Partnerships and Engagement and Professor of Communication and Technology Sun Sun Lim was named one of the Top 50 Asia Women Tech Leaders in 2024. Recognised for her research in the social impact of technology, Prof Lim has written over 100 publications and received multiple awards for her excellent teaching. Prof Lim also actively contributes to policy and public education, and has served as a Nominated Member of Parliament.



Prof Sun Sun Lim (R) receiving the Top 50 Asia Women Tech Leaders award from Prof Sandeep Sarkar, Senior Vice President, ASEAN HCLTech.

### Rising Star Award for Associate Professor Andree Hartanto

Named a Rising Star by the Association for Psychological Science, Associate Professor of Psychology (Education) Andree Hartanto has received recognition for his innovative research. This award acknowledges his groundbreaking studies on cognitive functions, emotional well-being, and healthy ageing. Assoc Prof Hartanto's work seeks effective interventions to enhance life quality. With over 80 peer-reviewed articles, his achievements highlight his commitment to advancing psychological science.



Assoc Prof Andree Hartanto

## Global Accolades

### InK reaches milestone with 8 million downloads



SMU Li Ka Shing Library

In March 2024, SMU's institutional repository, InK, reached an impressive 8 million cumulative downloads. Aiming to boost the visibility and impact of SMU's research, a total of 19,023 full text papers were made available on InK. Open access papers on InK had received more citations

than paid-access ones. Over the past three years, SMU papers were accessed by 35,672 institutions worldwide, with the commercial sector accounting for 36 per cent of downloads — highlighting the influence of SMU's research on industry.

### SMU is third in Asia for case writing impact

The downloads of SMU's Case for Management Practice (CMP) teaching cases in 2023 saw an almost 23 per cent increase from the previous year, marking an over three-fold jump since 2019. The cases are distributed on several

global case libraries, most prominently the Harvard Business Publishing platform. In 2023, CMP ranked 17<sup>th</sup> out of 50 on The Case Centre's inaugural Impact Index and third amongst Asian universities.

### Study reveals retirement challenges for young seniors



Minister for Health Mr Ong Ye Kung addressing the 3<sup>rd</sup> ROSA Annual Symposium.

A study by the Centre for Research on Successful Ageing (ROSA) at SMU examined Singapore's older generations, revealing concerns about young seniors' readiness for retirement. The research highlights gaps in financial planning, health management, and social engagement. Meanwhile, Minister of Health Mr Ong Ye Kung graced the 3<sup>rd</sup> ROSA Annual Symposium, which discussed the importance of infrastructure, policy and programmes through which people are nudged towards healthier behaviours, and sustained social engagement through continued employment. The findings stress the need for better support systems to ensure secure and fulfilling retirements for seniors.

### Prof Winston Chow engages in global climate dialogues

SMU Professor of Urban Climate and Co-Chair for Working Group II of the Intergovernmental Panel on Climate Change (IPCC) Winston Chow participated in major climate forums, including COP28 in Dubai. He highlighted SMU's urban research and joined IPCC

meetings in Istanbul and Riga to develop a special report on climate change and cities. This global involvement complements the work of SMU Urban Institute and the Cooling Singapore Initiative, supporting sustainable urban living trends worldwide.

## Significant Projects

### Cool Paints Trials in Schools to Mitigate UHI Effects

Professor of Urban Climate Winston Chow was awarded a grant by the National Environment Agency for his research on 'Cool Paints Trials in Schools to Mitigate UHI Effects'. The project aims to collect data to assess the efficacy of cool paints in mitigating the Urban Heat Island (UHI) effects in schools through the deployment of micro-scale sensors.



Prof Winston Chow

### Development of Secured Components & Systems in Emerging Technologies through Hardware & Software Evaluation

Associate Professor of Computer Science Gao Debin was awarded a grant as the SMU Co-Lead for the Cyber-Hardware Forensics & Assurance Evaluation and Mobile System Security and Cloud Security Second Phase on 'Development of Secured Components & Systems in Emerging Technologies through Hardware & Software Evaluation'. This research programme gathers a core team of experts from NTU and SMU to tackle security concerns around mobile devices and Internet of Things (IoT). The SMU team aims to holistically address security challenges in the mobile and cloud computing ecosystem pivoting on the new so-called 'confidential computing' techniques featuring hardware-based Trusted Execution Environments (TEEs). The research outcomes are expected to build up the infrastructure and capabilities towards a zero-trust computing domain for industry and government users.



Assoc Prof Gao Debin

### Unite or Divide? How Exposure to Socioeconomic Diversity Shapes Cross-Class Relations

Assistant Professor of Psychology Jacinth Tan was awarded with the Social Science and Humanities Research Fellowship, the first awardee from SMU to receive this prestigious fellowship grant. Her research "Unite or Divide? How Exposure To Socioeconomic Diversity Shapes Cross-Class Relations" aims to understand how Singaporeans respond to the current state of socioeconomic diversity (SED) and whether it shapes class relations – with the aim to provide important insights into how future changes in SED may affect Singapore's social compact.



Asst Prof Jacinth Tan

### How Does Earnings Management Affect Employee Mental Well-being?

Associate Professor of Accounting Holly Yang was awarded the Ministry of Education's Academic Research Fund Tier 2 for her project 'How Does Earnings Management Affect Employee Mental Well-being?'. The research examines the relationship between managers' incentives to meet or beat earnings expectations and employee mental well-being, and using data collected from a mental health mobile app, the team will explore whether and how pressure to meet firms' financial reporting objectives affect the mental health of lower level employees and their tendency to engage in misreporting. This award was a significant achievement as Assoc Prof Yang was successful in clinching this grant at her third submission to the grant call.



Assoc Prof Holly Yang

## External Research Awards Secured in FY2023<sup>1</sup>

Date Awarded	School/ICL	Funding Agency	Project Title	Principal Investigator
Apr 2023	College of Integrative Studies	National Environment Agency	Cool Paints Trials in Schools to Mitigate UHI Effects	Winston CHOW
May 2023	Centre for Research on Intelligent Software Engineering (RISE)	Cyber Security Agency of Singapore (CSA)	Trustworthy AI Centre NTU (TAICeN)	XIE Xiaofei (SMU PI)
May 2023	Centre For Research On Successful Ageing (ROSA)	Agency for Integrated Care	Understanding Emerging Trends of Care Communities for Singapore Residents Aged 50-76	Paulin STRAUGHAN
May 2023	School of Economics	Asian Development Bank Institute	Short-run impacts of Dhaka Mass Rapid Transit System (Metro Rail)	FUJII Tomoki
Jun 2023	School of Computing and Information Systems	AI Singapore's Robust AI Grand Challenge 2022	Towards Building Unified Autonomous Vehicle Scene Representation for Physical AV Adversarial Attacks and Visual Robustness Enhancement (Stage 1a)	XIE Xiaofei (Co-PI)
Aug 2023	School of Social Sciences	Ministry of Education's Social Science and Humanities Research Fellowship	Unite or Divide? How Exposure To Socioeconomic Diversity Shapes Cross-Class Relations	Jacinth TAN
Aug 2023	School of Accountancy	Ministry of Education's Academic Research Fund Tier 2	The Capital Market Consequences of ESG Reporting Divergence	CHENG Qiang
Aug 2023	School of Accountancy	Ministry of Education's Academic Research Fund Tier 2	How does earnings management affect employee mental well-being?	YANG I-Hwa
Aug 2023	College of Integrative Studies	Ministry of Education's Academic Research Fund Tier 2	Building a Deeper Long-Term Climate Understanding of Rainfall Trends in Singapore, West Malaysia, and Northern Sumatra	WILLIAMSON Fiona Clare
Aug 2023	School of Computing and Information Systems	Ministry of Education's Academic Research Fund Tier 2	ProExpan: Proactive Ontology Expansion for Conversational Agents	LIAO Lizi
Aug 2023	School of Computing and Information Systems	AI Singapore	Acute workforce response to "Demand pulled" patient lifecycle data via Generative Flow Networks and Graph Neural Networks	LAU Hoong Chuin
Sep 2023	School of Accountancy	Institute of Singapore Chartered Accountants (ISCA)	Sustainability Transformation Journey in Singapore's Manufacturing Sector	WANG Jiwei
Sep 2023	School of Computing and Information Systems	Slowmist Pte Ltd	Web3 Security	ZHU Feida
Sep 2023	School of Computing and Information Systems	Sengkang General Hospital Pte Ltd	Sensors In-Home for Elder Wellbeing (SINEW)	TAN Ah Hwee

<sup>1</sup> As of 31 March 2024. For a complete and updated listing of SMU's External Research Grants, visit [research.smu.edu.sg/research-grants/external-research-grants](https://research.smu.edu.sg/research-grants/external-research-grants)

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Oct 2023	School of Computing and Information Systems	Tokka Labs Pte Ltd	Data-driven Optimisation and Artificial Intelligence for Future Fintech	WANG Hai
Oct 2023	School of Computing and Information Systems	ZEASN Technology Pte Ltd	Tokenized Economy and Collaborative Intelligence for Web3 Media Industry	ZHU Feida
Nov 2023	School of Computing and Information Systems	Smart Nation Group's Translational R&D 2.0 Grant (TRANS2.0)	Titan Code Analysis: Vulnerability Discovery with Large Code Models	David LO
Dec 2023	School of Computing and Information Systems	AI Singapore's AI Governance Research Grant Call	AntiGen: Safeguarding Artistic and Personal Visual Data from Generative AI	HE Shengfeng
Dec 2023	College of Integrative Studies	National Research Foundation's Climate Impact Science Research (CISR) Programme Grant Call 1	Developing a risk assessment and communication platform to translate climate projections to policy	Terry VAN GEVELT
Dec 2023	Centre on Security, Mobile Applications and Cryptography (SMC)	Cyber Security Agency of Singapore and National Research Foundation, Singapore's Cyber-Hardware Forensics & Assurance Evaluation and Mobile System Security and Cloud Security Second Phase (Closed Call)	Development of Secured Components & Systems in Emerging Technologies through Hardware & Software Evaluation	GAO Debin (SMU Co-Lead)
Jan 2024	Sim Kee Boon Institute for Financial Economics (SKBI)	Ford Foundation	For the Singapore Green Finance Centre to boost impact investment development in Asia through research, convening and community of practice building	LIANG Hao
Jan 2024	Centre For Research On Successful Ageing (ROSA)	Agency for Integrated Care	Understanding Emerging Trends of Care Communities for Singapore Residents Aged 50-76	Paulin STRAUGHAN
Feb 2024	School of Computing and Information Systems	Ministry of Education's Academic Research Fund Tier 2	PromptTutor - Generative AI-enabled Personalised Tutor for Reflection Learning in Programming Courses	OUH Eng Lieh
Feb 2024	School of Computing and Information Systems	Ministry of Education's Tertiary Education Research Fund	PresentationPro: Improving Public Speaking Skills through AI-Driven Virtual Reality Interactions	SHIM Kyong Jin
Feb 2024	School of Computing and Information Systems	Singapore-MIT Alliance for Research and Technology	Human workers and resource allocation optimization	WANG Hai
Feb 2024	School of Computing and Information Systems	Ministry of Education's Academic Research Fund Tier 2	Evaluating the Perception Module in Autonomous Driving Systems: Impact on Vehicle Motion	XIE Xiaofei
Feb 2024	School of Computing and Information Systems	Ministry of Education's Academic Research Fund Tier 2	Improving Collaborations between Clinicians and AI for Head and Neck Cancer Screening	LEE Min Hun

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Feb 2024	School of Computing and Information Systems	Ministry of Education's Academic Research Fund Tier 2	ACTBIG: On Analysing Career Trajectories using Big Data	LIM Ee Peng
Mar 2024	Lee Kong Chian School of Business & College of Integrative Studies	Ministry of Education's Academic Research Fund Tier 3	Climate Transformation Hub (CTH)	LI Weikai (SMU Co-PI for Cluster 5)  Winston CHOW (SMU Co-PI for Cluster 1)
Mar 2024	School of Computing and Information Systems	AI Singapore Research Programme – the 5 <sup>th</sup> Call	Learning Assisted Human-AI Collaboration for Large-scale Practical Combinatorial Optimization	CAO Zhiguang (SMU Co-PI)
Mar 2024	School of Computing and Information Systems	Singapore-MIT Alliance for Research and Technology	Optimizing Multi-Modal Human Machine Interaction	Archan MISRA
Mar 2024	School of Computing and Information Systems	Singapore-MIT Alliance for Research and Technology	AI-Enhanced Online Learning	Archan MISRA