

ASPIRE

An SUTD Publication : Impactful Research Endeavors



24% of SUTD faculty listed among the top 2% of
scientists globally

Content

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24% of SUTD Faculty Listed Among the Top 2% Scientists in the World

24% of SUTD faculty have been listed among the top 2% of scientists globally. The [database](#) released by Stanford University and Elsevier BV identifies the world’s top scientists across 22 scientific fields and 176 sub-fields. The selection is based on the top 100,000 scientists by c-score (with and without self-citations) and the database provides standardised information on citations, h-index, co-authorship adjusted h-index, citations to papers in different authorship positions and a composite indicator.

Single-year (2020) Impact

(In alphabetical order of last name)

More information can be found [here](#)

Faculty	Rank in field (without self-citations) & Faculty Research Area		Faculty	Rank in field (without self-citations) & Faculty Research Area	
Ai, Ye		808 (0.79%) Analytical Chemistry Total in field: 102,767 Microfluidic bioanalytical technology for diagnostics and therapy	Ang, Lay Kee		2,852 (1.06%) Applied Physics Total in field: 269,833 Interface and device physics
Blessing, Lucienne T.M.		153 (1.53%) Career-long impact: 168 (1.68%) Design Practice & Management Total in field: 9,999 Study of design practice and education, and of user experience	Cheong, Kang Hao		1,901 (3.87%) Fluids & Plasmas Total in field: 49,117 Complex systems, evolutionary game theory, nonlinear dynamics in complex networks and AI/ML in medical and healthcare
Chong, Tow Chong		4,838 (1.79%) Career-long impact: 4,991 (1.85%) Applied Physics Total in field: 269,833 Pioneered research in strained-layer GaAs-on-Si optoelectronics devices as well as superlattice phase change memory and artificial cognitive memory.	Chua, Chee Kai		77 (0.08%) Career-long impact: 162 (0.17%) Industrial Engineering & Automation Total in field: 96,361 3D printing or additive manufacturing
Duan, Lingjie		1,671 (0.91%) Career-long impact: 3,567 (1.94%) Networking & Telecommunications Total in field: 183,648 Network economics and optimisation	Liu, Jun		2,231 (0.88%) Artificial Intelligence & Image Processing Total in field: 253,359 Computer vision and video analytics
Lu, Wei		6,696 (2.64%) Artificial Intelligence & Image Processing Total in field: 253,359 Natural language processing	Luo, Jianxi		162 (1.62%) Design Practice & Management Total in field: 9,999 Engineering design innovation

24% of SUTD Faculty Listed Among the Top 2% Scientists in the World

Faculty			Rank in field (without self-citations) & Faculty Research Area		
Mathur, Aditya		185 (0.85%) Career-long impact: 387 (1.79%)	Phoon, Kok Kwang		46 (0.09%) Career-long impact: 90 (0.17%)
		Software Engineering Total in field: 21,676			Geological & Geomatics Engineering Total in field: 52,403
		Design of secure and safe critical infrastructure			Underground digital twin, risk and reliability of geo-structures
Poria, Soujanya		619 (0.24%) Career-long impact: 3,644 (1.44%)	Quek, Tony Q.S.		564 (0.31%) Career-long impact: 1,471 (0.80%)
		Artificial Intelligence & Image Processing Total in field: 253,359			Networking & Telecommunications Total in field: 183,648
		Common sense-based AI models, empathetic and affective-aware dialogue systems, and multimodal deep learning			Wireless communications and networking, network intelligence, big data processing, internet-of-things, URLLC, and wireless security
Raghavan, N.		5,027 (1.86%)	Rosen, D. W.		9 (0.09%) Career-long impact: 15 (0.15%)
		Applied Physics Total in field: 269,833			Design Practice & Management Total in field: 9,999
		Ultra-thin dielectric breakdown, design for reliability, prognostics and health management			Engineering design and 3D printing
Tan, Dawn T.H.		796 (1.23%) Career-long impact: 1,515 (2.35%)	Wu, Ping		4,891 (1.81%)
		Optics Total in field: 64,512			Applied Physics Total in field: 269,833
		The study of ultrafast optical phenomena and nonlinear integrated photonics			Materials chemistry modelling, water wetting, solar cells, and gas sensors
Yang, Hui Ying		1,618 (1.81%)	Yang, Joel K.W.		2,331 (2.61%)
		Nanoscience & Nanotechnology Total in field: 89,177			Nanoscience & Nanotechnology Total in field: 89,177
		Nanomaterials for energy and water applications			Nanophotonics, plasmonics and nanolithography
Yang, Shengyuan A.		1,748 (0.65%)	Yeo, Kiat Seng		1,174 (1.12%) Career-long impact: 857 (0.82%)
		Applied Physics Total in field: 269,833			Electrical & Electronic Engineering Total in field: 105,029
		Condensed matter physics			Low-power integrated circuit design, RF/mm-wave
Yuen, Chau		538 (0.29%) Career-long impact: 1,457 (0.79%)	Zhou, Jianying		3,269 (1.29%) Career-long impact: 1,558 (0.61%)
		Networking & Telecommunications Total in field: 183,648			Artificial Intelligence & Image Processing Total in field: 253,359
		Wireless communications, Internet-of-Things, smart grid			Cybersecurity

\$10 Million for SUTD's Sustainability Research



SUTD is committing \$10 million over the next three to five years towards a new and inclusive Sustainability Plan (SSP) that will leverage technology and design thinking to build a more sustainable and happier world by design.

The SSP builds on SUTD's international leadership in design and engineering innovation by framing three key commitments as leverage points for creating new sustainable technologies:

- To transform SUTD campus into a green experimental ground for test-bedding of new sustainable technologies (OASIS – Open Arena for Sustainability Innovation and Solutions)
- To launch a new research initiative on Circular Economy to generate sustainable products and software solutions
- To provide hands-on sustainability learning/education for students

A new design centre, SUTD DesignZ, will be set up to lead the University's sustainability efforts. The centre's Director, Prof Tai Lee Siang, Architecture and Sustainable Design Pillar (ASD) and SUTD's Chief Sustainability Officer Prof Erwin Viray (ASD) will spearhead the efforts. Senior management, student leaders, alumni, faculty and staff will be involved to influence key decisions and drive the sustainability agenda at the university level.

SUTD President, Prof Chong Tow Chong said: "To achieve holistic sustainability, SUTD believes in the use of design defined as 'Design, when powered by technology, is the informed, intentional, intelligent and imaginative force that will drive innovations to improve lives, grow economies and sustain our world.' This is why we are launching our next generation DesignZ Centre to lead our sustainability efforts to transform SUTD into a living lab for new sustainable technologies, in partnership with industry and community, to build a more sustainable and happier world by design."

More information can be found [here](#)

Aviation Research Scales Greater Heights at SUTD



Prof Peter Jackson (L) and Asst Prof Nuno Ribeiro (R).

Even as the COVID-19 pandemic grounded aircraft worldwide, aviation research at SUTD continues to take flight—with new tools for allocating airport slots, predicting the impact of extreme weather events and more.

Given the advances in commercial and space flight over the years, it's easy to forget the first successful flight in history happened less than a century ago—specifically, in 1903. Since then, the aviation industry has reached greater heights with technological advances improving efficiencies and with the introduction of transatlantic jets and wide-bodied aircraft. All of which led to steady rates of growth in the industry.

The COVID-19 pandemic, however, brought the world to a virtual halt in 2020—and with it, many of the planes that had shuttled people across cities and continents. For instance, Singapore's Changi Airport—once one of Asia's busiest transportation hubs—saw a 96% reduction in passenger air traffic in 2021 versus 2019.

But as nations cautiously reopen their borders, the aviation industry will once more have to grapple with issues like airport congestion, the call for greater fuel efficiency and reducing aviation's environmental impact. Heeding the call to address these concerns are researchers at the Singapore University of Technology and Design's (SUTD) [Aviation Studies Institute](#) (ASI).

Set up in collaboration with the Civil Aviation Authority of Singapore, the ASI aims to be a world-leading centre of aviation policy research and thought leadership, advancing the development of aviation in the Asia-Pacific region. Here's a bird's-eye view of the ongoing research at ASI and SUTD.

Adapting Aviation to Changing Circumstances

With SUTD conveniently located just beside Changi Airport, ASI is well-positioned to explore ongoing or anticipated aviation issues. As passenger flights begin to pick up once more through the vaccinated travel lanes, researchers like Asst Prof Nuno Ribeiro from the Engineering Systems and Design (ESD) Pillar are closely studying how airport capacity management can be improved in a post-COVID world.

“The main challenge comes from the uncertainty in air travel demand underlying the transition to the new normal,” said Asst Prof Ribeiro. According to him, this uncertainty stems from several questions, ranging from when and how fast recovery will occur to which airlines will survive.

“Given these uncertainties, allocating airport slots is challenging and very ineffective in this current situation,” he added. After all, slot allocation is a complex process—involving the allocation of a finite number of slots across thousands of airline requests while complying with administrative rules and the directives of various stakeholders.

Accordingly, Asst Prof Ribeiro and his team are developing tools meant to support airport managers in deciding which flights to schedule and when to schedule them. To optimise slot allocation decisions, their tools combine predictive and prescriptive analytics from mathematical optimisation to machine learning.

Concurrently, the team is applying machine learning methods to understand how different operating conditions affect air traffic operations and airfield capacity, such as specific weather events. “Climate change will lead to more frequent extreme weather conditions,” explained Asst Prof Ribeiro, adding that lightning is one of the more disruptive weather events in aviation. With Singapore said to be the world's lightning capital, having predictive tools in place can help local air traffic controllers better deal with such situations.

Aviation Research Scales Greater Heights at SUTD



Reimagining Airports in the New Normal

Beyond the crucial work of slot allocation and air traffic management, ASI is also exploring other aspects of aviation—made possible by the institute’s interdisciplinary approach. “We can easily pull together faculty from diverse backgrounds to consider issues that demand holistic approaches,” stated Prof Peter Jackson, ASI Director and Head of the ESD Pillar.

For example, SUTD is currently looking into the airport experience—namely, how passengers and employees alike experience the airport in the pandemic settings. Led by Prof Lucienne Blessing from the Engineering Product Development (EPD) Pillar, the researchers have embarked on a worldwide survey to assess the changes in airport experience caused by COVID-19. The survey will touch upon aspects like check-in, the use of automated tools and airport accessibility.

Looking forward, the institute has also commissioned a [white paper discussing the future of Southeast Asia’s major hub airports](#) in cities ranging from Jakarta to Bangkok. “A fundamental question is: why do we care about the hub status of airports?” remarked Prof Jackson. “The reason is primarily economic: the presence of a large airport drives economic development in the long run.”

All in all, these efforts give a glimpse into the various research projects taking flight at the ASI and SUTD. “We are pursuing a two-pronged approach to the development of ASI. The first is to progressively build our capabilities in optimisation, simulation, data fusion and machine learning to support aviation research,” said Prof Jackson.

“The second is a vision to integrate all areas of air traffic flow management to balance demand and supply for limited network resources with much greater efficiency. We have made considerable progress in developing this vision through flight schedule optimisation, network capacity planning, passenger choice modelling and collaborative decision-making. We are entering the second phase of this development which will feature greater integration across all these areas,” he concluded.

Read more on ASI’s white papers [here](#).



SUTD Explains Video Series

Watch our faculty members and researchers lead discussions on everyday topics and explain how their inter-disciplinary research impacts us. Click this [link](#).



Research News

SUTD Design Innovation Forum 2022



On 15 March 2022, SUTD organised the SUTD Design Innovation Forum in partnership with The Straits Times. Ms Grace Fu, Minister for Sustainability and the Environment delivered the opening address at the event which was in its second year running. Around 900 participants attended the hybrid event.

Prof Tai Lee Siang, Head of Pillar of Architecture and Sustainable Design (ASD) and Centre Director of DesignZ at SUTD moderated the discussion on driving innovation and creating a more sustainable and happier world by design. The panellists, who were also the keynote speakers, included Prof Chong Tow Chong, President of SUTD, Mr Topher White, Founder and CEO of the San Francisco-based non-profit Rainforest Connection, and Mr Patrik Schumacher, Principal of Zaha Hadid Architects, one of the world's most forward-thinking architectural firms. The forum comes amid efforts by SUTD to develop creative, sustainable human-centred solutions for a better world using artificial intelligence, design and technology.

The panel discussion sparked conversations on how the dissatisfaction with the status quo could eventually be the force behind design that pushes boundaries and mines the possibilities of technology. To watch the SUTD Design Innovation Forum 2022, click [here](#).

More information can be found [here](#)

Research News

IEEE 14th International Symposium on MCSoc-2021



Prof Yeo Kiat Seng, Associate Provost for Research and International Relations, SUTD gave the opening address.



SUTD faculty and students who supported the conference (from left to right): Thurein Aung (Executive), Loo Tan Rong (Executive), Dr Teo Tee Hui (Conference Chair Person), Huang Tzu Huan (Executive), Chua Shi Hui (Executive), Yang Shih Yi (Executive).

The IEEE 14th International Symposium on Embedded Multicore/Many-core Systems-on-Chip (MCSoc 2021) was hosted for the first time at SUTD from 20 to 23 Dec 2021. Around 300 participants worldwide attended the hybrid event.

Along with Industry 4.0, the Internet of Things (IoT), cloud computing, Artificial Intelligence (AI) and data-centric computing have revolutionised automation and manufacturing, thus contributing to the high demand in computing power. This edition of MCSoc offered new tracks on AI on-chip learning and neuromorphic computing together with nine tracks on System on Chip (SoC) design and application to bring new and potent methods for design from devices to application.

More information can be found [here](#)

2021 Singapore 100 Women in Tech



ASSOCIATE PROF CAI KUI



ASSOCIATE PROF DAWN TAN



ASSISTANT PROF DORIEN HERREMANS



JEAN TAN



GLENDA WEE

Four SUTD faculty and alumna have been selected for the [2021 Singapore 100 Women in Tech \(SG100WIT\) List](#), namely Assoc Prof Cai Kui (SMT), Assoc Prof Dawn Tan (EPD), Asst Prof Dorien Herremans (ISTD) and alumna Jean Tan (Computer Science and Design, Class of 2015). Alumna Glenda Wee (Computer Science and Design, Class of 2021) was also recognised in the [Girls in Tech List](#) which was newly introduced this year.

Organised by the Singapore Computer Society (SCS) and in partnership with the Infocomm Media Development Authority (IMDA), the SG100WIT List celebrates women role models in tech who have made significant contributions to the industry. A total of 600 nominations were received that year.

More information can be found [here](#)

Research News

ASD Faculty Appointed the Jury Chair of UNESCO Asia-Pacific Awards for Cultural Heritage Conservation



Assoc Prof Yeo Kang Shua (ASD) was appointed the Jury Chair of this year's UNESCO Asia-Pacific Awards for Cultural Heritage Conservation. Having been a frequent member of the jury since its inception and even as an award winner himself on two occasions, Prof Yeo led an expert panel of seven members this year to deliberate through the list of entries received throughout the region. The prestigious award acknowledges exemplary efforts by individuals and organisations to restore or conserve structures, places and properties of heritage value in the region.

Advanced AI System for Enabling Smart HDB Estate Services



Together with Xjera Labs and Advanced Digital Sciences Center (ADSC), the SUTD research team set off to develop **Estate-IQ**, an advanced Artificial Intelligence (AI) system that can support HDB and other stakeholders to automate incident management, optimise maintenance regimes and resources, as well as improve their data handling. The end goal of this new project is to use the state-of-the-art AI technologies to provide better HDB estate services to the residents. The SUTD team comprises ISTD faculty including Assoc Prof Chen Binbin (SUTD lead), Prof Tony Quek, Prof David Yau, Asst Prof Dinh Tien Tuan Anh, Asst Prof Lim Kwan Hui, Asst Prof Soujanya Poria, as well as Mr Foo Siang Chi (OCIF).

SUTD x Armstrong 3D Printing Design Innovation Challenge: Digital Gastronomy



On 18 March 2022, 78 students from junior colleges, polytechnics, IB schools and At-Sunrice GlobalChef Academy competed in the **SUTD X ARMSTRONG 3D Printing Design Innovation Challenge: Digital Gastronomy**, the first of its kind 3D food printing competition held in Singapore.

In the first round of the challenge, contestants had to “engineer” and cook a dish featuring yam. The top 6 teams progressed to the final round, which will be held on 8 June 2022. During the final round, contestants will have to create a dish using food waste as the main ingredient.

Chef Han Liguang of Michelin starred Restaurant Labyrinth, Gladys Wong, Senior Principal Dietitian from Khoo Teck Puat Hospital, and Assoc Prof Low Hong Yee from SUTD formed the panel of judges, while Prof Chua Chee Kai, Head of EPD Pillar and Cheng Tsang Man Chair Professor at SUTD, was the advisor for this nation-wide competition.

This challenge was sponsored by Armstrong, OCBC Bank, and the Singapore Food Agency, and supported by At-Sunrice GlobalChef Academy, and the Science Centre Singapore. In addition, FRANK by OCBC sponsored the FRANK Best Taste Design Award.

More information can be found [here](#)

Research News

ST Engineering, Universities Pioneer Research Collaboration Model



ST Engineering is partnering with the National University of Singapore (NUS), Nanyang Technological University (NTU), SUTD and A*STAR in a first of its kind research collaboration model.

The **Research Translation @ ST Engineering**, is a model designed to allow for the construct of multi-disciplinary teams, comprising partner researchers and ST Engineering technology and engineering teams in the same collaborative space to enable academia and practitioner engagements. This would foster a stronger working relationship between ST Engineering and its partners to drive impactful translational research that meets fast-evolving market needs and customer demands.

More information can be found [here](#)

Entrepreneurial and E-Commerce Skills Programme in Indonesia



The opening ceremony of the **Entrepreneurial and E-Commerce Skills Programme in Indonesia** took place on February 15, 2022. The programme was designed by the Lee Kuan Yew Centre for Innovative Cities (LKYCIC) at SUTD, in collaboration with local partner Indonesia Resilience, and was sponsored by Temasek Foundation International and the Government of DKI Jakarta. Mr Anies R. Baswedan, Governor of Jakarta, Mr Benedict Cheong, CEO of Temasek Foundation International and Prof Cheong Koon Hean, Chair of LKYCIC attended the event. The programme provided opportunities to show how research could be translated into practical applications. In particular, it illustrated how LKYCIC used urban science and big data analytics to propose solutions at a micro-level in big Asian cities in the current and post-pandemic context.

More information can be found [here](#)

MINDEF, SUTD Join Hands to Build Defences Against Cyber Attacks



A memorandum of understanding on operational technology security for critical infrastructure was signed by defence cyber chief Brigadier-General (BG) Mark Tan and SUTD Associate Provost for Research and International Relations Prof Yeo Kiat Seng. The partnership will strengthen the collaboration in several areas, including research and technology, threat modelling and training.

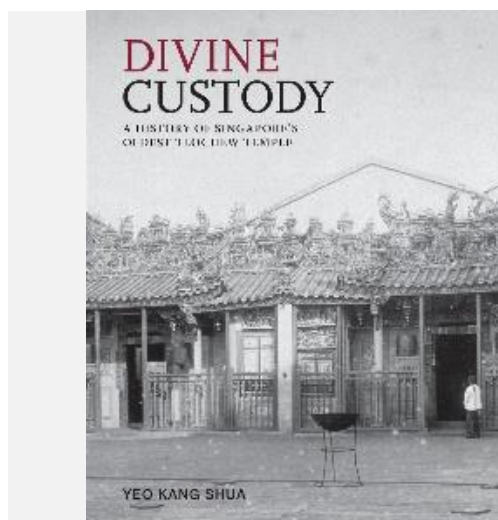
"Under the MOU, we will also help to conduct research and groom the next generation of cyber experts who can help defend our nation's critical infrastructure," said Prof Yeo at the signing which took place alongside the Critical Infrastructure Security Showdown at SUTD, a two-week cyber-security exercise co-organised by the SAF and SUTD.

Photo credit: MINDEF

More information can be found [here](#)

Research News

A History of Singapore's Oldest Teochew Temple



'Divine Custody: A History of Singapore's Oldest Teochew Temple' is a history of the Wak Hai Cheng Bio/Yueh Hai Ching temple, the oldest Teochew temple in Singapore. No written sources or inscriptions were found to commemorate the founding of the temple, except for author Assoc Prof Yeo Kang Shua's (ASD) research into the history of land tenure of Singapore and old maps and title deeds which provided new evidence for the temple's foundation. Assoc Prof Yeo led the UNESCO award-winning effort to restore the temple from 2010 to 2014, and was uniquely placed to understand what its architecture could tell us of the legacies and histories of the communities that were formed by the temple.

More information can be found [here](#)

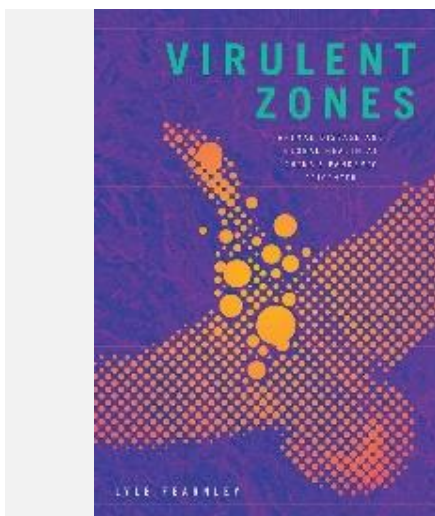
Shaping the Futures of Work



In Asst Prof Nilanjan Raghunath's (HASS) latest book, 'Shaping the Futures of Work: Proactive Governance and Millennials', she examines the relationships between millennials, proactive governance, and the impact technology has on the future of work from a sociological point-of-view. She discusses the concept of a flux society where change is not the only new constant and with the **Fourth Industrial Revolution** well upon us, disruptions in the workplace are only going to be more pronounced. Millennials who are thought of as future-proofed, may in fact, be as equally, if not, even more vulnerable than the other generations even though they are the savvy disruptors; the agents of change.

Her latest book is available at [SUTD library](#) and [Amazon](#).

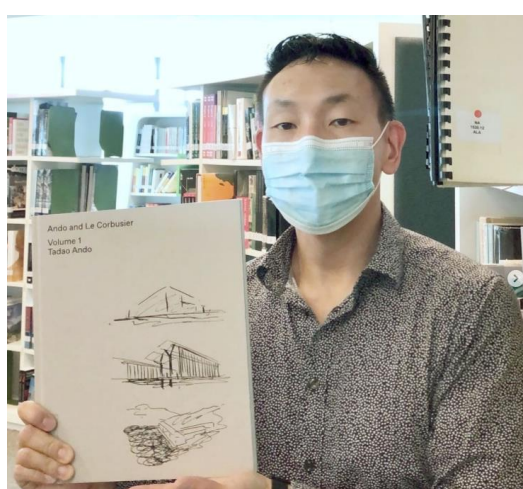
Virulent Zones



Scientists have identified southern China as a likely epicenter for viral pandemics, a place where new viruses emerge out of intensively farmed landscapes and human-animal interactions. In *Virulent Zones*, Asst Prof Lyle Fearnley (HASS) documents the global plans to stop the next influenza pandemic at its source, accompanying virologists and veterinarians as they track lethal viruses to China's largest freshwater lake, Poyang Lake. Revealing how scientific research and expert agency operate outside the laboratory, he shows that the search for origins is less a linear process of discovery than a constant displacement toward new questions about cause and context.

More information can be found [here](#)

The Design and Construction of the Wrightwood 659 Museum



In the newly released book: 'Ando and **#LeCorbusier**, Volume 1', Senior Lecturer Daniel Whittaker (ASD) contributes a chapter detailing the comprehensive design and construction of the Wrightwood 659 museum, allowing us to draw valuable lessons in rehabilitating traditional shophouses. Interestingly, the Wrightwood 659 museum was designed to fit within a masonry shell of a 1930 apartment building, which is an architectural feat because the existing walls cannot bear the weight of the heavy works of art that the museum will display. Dr Whittaker was the curator for the Tadao Ando portion of the museum's inaugural exhibit 'Ando and Le Corbusier: Master of Architecture'.

More information can be found [here](#)

Research Publications

The Normative Dimensions of Flood Risk Management



The normative dimensions of flood harm in flood risk management (FRM) have become salient in a milieu of extreme flood events. In an article published in the Journal of Flood Risk Management, Asst Prof Jeffrey Chan (HASS) leads a discussion on under-explored notions of flood harm in the FRM discourse and in tandem, to expand the normative dimensions of FRM in a milieu where difficult ethical choices abound.

More information can be found [here](#)

How do Children Learn to Trust an Adult's Non-Verbal Cues?



According to SUTD researchers, children as young as three to five years old can already use context-specific information to determine whether or not an adult is a reliable source of information. Their study, which was led by Assoc Prof Yow Wei Quin (HASS), published in the journal *Cognitive Development*, underscores the importance of providing children with accurate and consistent information.

More information can be found [here](#)

SUTD Developed Material for Superfast and Ultrastable Na-Ion Storage



Assoc Prof Yang Hui Ying (EPD) and team have discovered that a series of cubic spinel $X\text{In}_2\text{S}_4$ ($X = \text{Fe}, \text{Co}, \text{Mn}$) anodes can be used for superfast and ultrastable Na-ion storage. The FeIn_2S_4 delivers the best electrochemical performance among them with the amazing results especially for its superfast charging (9–13 s per charge with $\approx 300 \text{ mAh g}^{-1}$ input) and ultrastable cycling capabilities.

More information can be found [here](#)

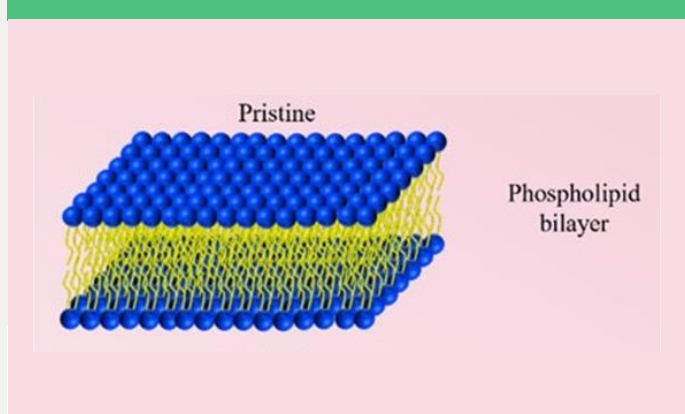
Harnessing the Potential of mOVDs for Optical Anti-Counterfeiting



Counterfeiting is a global challenge causing losses of more than half a trillion dollars and one million lives due to counterfeit drugs and critical system components. Unfortunately, traditional optically-variable devices (OVD) can be easily replicated. In a review article in Chemical Reviews, Assoc Prof Joel Yang (EPD) and collaborators discuss meta-atoms, a more robust solution for anti-counterfeiting.

More information can be found [here](#)

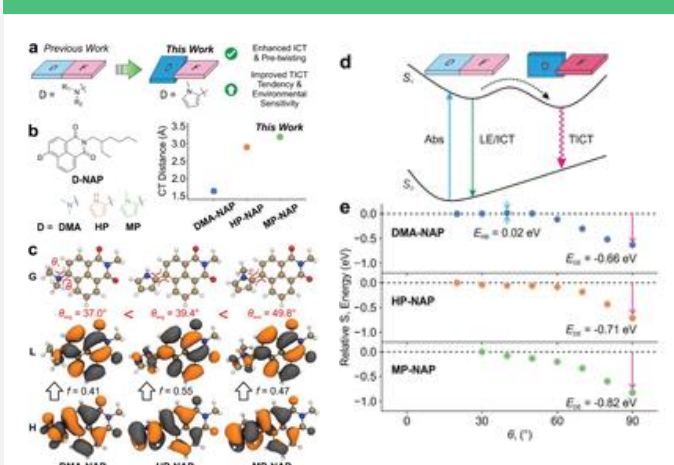
Low-cost Electroporation Device to Expand Global Access to Cancer Drugs



Asst Prof Desmond Loke (SMT) and team developed a microsize-gap multiple-shot electroporation (M2E) device that could improve the effectiveness of delivering cancer drugs at a lower cost, globally. The device allows cancer cells to show a time window for the uptake of molecules of 2 hours, which is 400% larger than conventional electroporation systems.

More information can be found [here](#)

Developing Highly Sensitive Fluorescent Probes and AIEgens



Asst Prof Liu Xiaogang (SMT) and his team of researchers developed a simple and general method to engineer highly environmentally sensitive fluorescent probes by replacing dialkylated amino donors with an *N*-methylpyrrole group to enhance twisted intramolecular charge transfer.

More information can be found [here](#)

Research Publications

Carbon Labelling can Potentially Encourage Eco-friendly E-commerce



Assoc Prof Lynette Cheah (ESD) and team have found that adding carbon emissions labels in e-commerce shopping websites may influence online shoppers to choose more sustainable shipping options. The study, published in the *Journal of the Transportation Research Board*, specifically looked into cross-border e-commerce shipping options on the popular Chinese online shopping website, Taobao.

More information can be found [here](#)

Mapping where the Wind Blows in Worker Dormitories



By studying airflow and viral transmission in two foreign worker dormitories, a study led by Dr Zheng Kai (ASD) showed the importance of designing buildings for natural ventilation in preventing the spread of COVID-19. The team continues to explore work on modelling ventilation in other high-risk public areas, such as hospitals, campuses and even food and beverage establishments.

More information can be found [here](#)

Using Quantum Parrondo's Random Walks for Encryption



Asst Prof Kang Hao Cheong (SMT) and his research team have set out to apply concepts from quantum Parrondo's paradox in search of a working protocol for semiclassical encryption. In a [Physical Review Research letter](#), the team published the paper 'Chaotic switching for quantum coin Parrondo's games with application to encryption' and discovered that chaotic switching for quantum coin Parrondo's games has similar underlying ideas and working dynamics to encryption.

More information can be found [here](#)

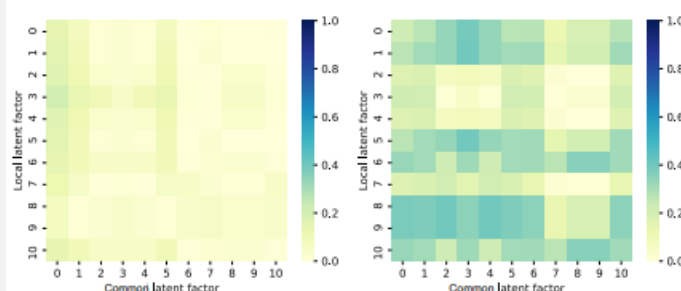
Explaining Multimodal Hateful Meme Detection Models



Asst Prof Roy Lee (ISTD) and team investigated the explainability of multimodal hateful meme detection models, and the paper was accepted to the premier international conference, The Web Conference 2022.

More information can be found [here](#)

Graph-wise Common Latent Factor Extraction for Unsupervised Graph Representation Learning



Assoc Prof Cheung Ngai-Man (ISTD) proposed a new principle for unsupervised graph representation learning. He hopes to eventually extract common latent factors from an input graph and achieve improved results on downstream tasks to the current state-of-the-art. His paper was selected as an oral presentation at the AAAI Conference 2022, one of the most prestigious and comprehensive venue in AI.

More information can be found [here](#)

Slot Allocation Amidst COVID-19 Recovery



The Aviation Studies Institute (ASI) has commissioned the consulting arm of [IATA](#) to assess the perspectives of regional stakeholders on the slot allocation processes in Southeast Asia amidst aviation's recovery from the COVID-19 pandemic. The white paper is intended to support regional authorities, airport operators and airlines in their endeavours to recover from the impact of the pandemic in a sustainable and fair manner.

More information can be found [here](#)

Research Achievements

Prof Ricky Ang Elevated to IEEE Fellow, Class of 2022



For his contributions to electron emission and space charge effects in nanodiode and quantum materials, [Prof Ang Lay Kee, Ricky \(SMT\)](#) has been elevated to [IEEE Fellow, Class of 2022](#). He is one of five Fellows from Singapore in the Class of 2022.

Prof Ang is currently the Head of the Science, Mathematics and Technology (SMT) cluster, and the Ng Teng Fong Chair Professor for the SUTD-Zhejiang University (ZJU) Innovation, Design and Entrepreneurship Alliance (IDEA). He has also been awarded the IEEE Distinguished Lecturer since 2018. The [IEEE Fellow](#) is a distinction reserved for select IEEE members with extraordinary accomplishments in any of the IEEE fields of interest. Each year, the total number of recipients is less than 0.1% of the IEEE voting members.

More information can be found [here](#)

SUTD Won Innovation Prize at Purmundus Challenge 2021

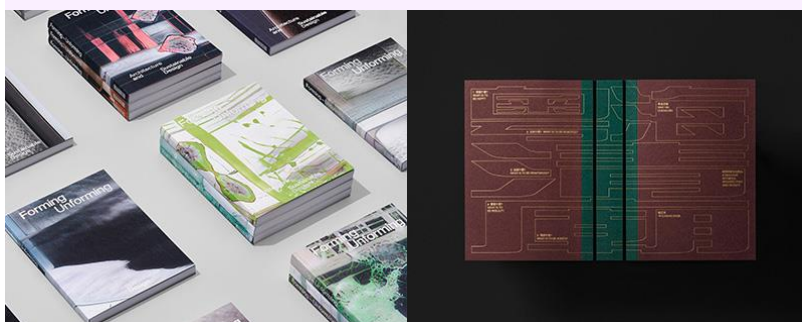


For their project 'Bespoke 3D Printed Soft Robots', Asst Prof Pablo Valdivia y Alvarado (EPD) and his research team won the Innovation Prize at the Purmundus Challenge 2021, at Formnext 2021.

Their batoid-inspired optimised soft robot displayed 50% faster swimming speeds, 28% faster turning rates, and 55% smaller turning radii compared to other benchmark prototypes. Read more on their [universal approach to tailoring soft robots](#).

More information can be found [here](#)

Golden Pin Design Mark

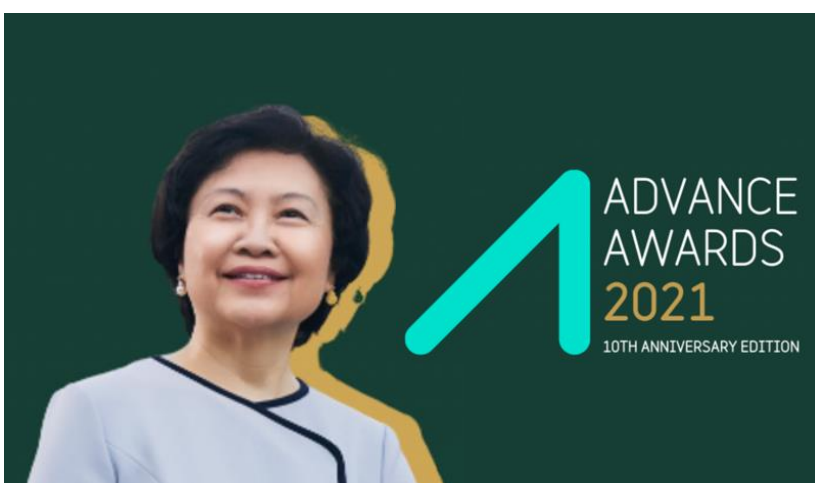


Two of ASD Pillar's publications, '**Forming – Unforming**' and **Wak Hai Cheng Bio: A Dialogue Between Architecture and History (粤海清庙：建筑与历史的对话)**, received the Golden Pin Design Mark. The '**Forming – Unforming**' was authored by Prof Erwin Viray, Assoc Prof Yeo Kang Shua, Asst Prof Immanuel Koh and Ms Julie Goh while the '**Wak Hai Cheng Bio: A Dialogue Between Architecture and History (粤海清庙：建筑与历史的对话)**' was authored by Assoc Prof Yeo Kang Shua.

The 627 winners of the 2021 Golden Pin Design Award were announced on 9 September 2021. Established in 1981, the Golden Pin Design Award is the most influential design award in the global Chinese-speaking market.

More information can be found [here](#)

Prof Cheong Koon Hean Honoured as Advance Awards 2021 Finalist



The Advance Awards 2021 virtual ceremony was held on 8 September 2021, where Prof Cheong Koon Hean was celebrated as one of four finalists in the [Asia Impact Award category](#). [Prof Cheong](#) is currently chairperson of the Lee Kuan Yew Centre for Innovative Cities (LKYCIC) at SUTD. She has played a key role in the urban transformation of Singapore over the years.

The Advance Awards was established in 2012. Each year, it recognises 100 outstanding individuals who are shaping our world and making an extraordinary impact on the global stage in various industry sectors.

More information can be found [here](#)

Research Achievements

SUTD Awarded I-4AM 2022



Assoc Prof Arlindo Silva (EPD) and MIBD student Yeo Zhen Yong’s paper, ‘Assessing Suitability of Obsolete Parts for Additive Manufacturing’, was selected as 'One of the Most Distinguished Papers' at the 2nd International Conference on Industry 4.0 and Advanced Manufacturing (I-4AM 2022), held online by the Centre for Product Design and Manufacturing (CPDM), partnering with twelve other departments at Indian Institute of Science (IISc), Bengaluru during 10-11 January 2022.

More information can be found [here](#)

Shi Yin Cup 3D Food Printing and Precision Nutrition



SUTD Research Associate Aakanksha Pant (EPD) won 3rd prize for her work in fresh vegetable 3D Printing in the ‘Shi Yin Cup 3D Food Printing and Precision Nutrition’ Award. The prize, which was sponsored by Shi Yin (时印) - a food printer manufacturer in China - was awarded for the paper titled ‘3D food printing of fresh vegetables using food hydrocolloids for dysphagic patients’ published in *Food Hydrocolloids*. Prof Chua Chee Kai, Head of Pillar, Engineering Product Development at SUTD was also the corresponding author of the paper.

More information can be found [here](#)

SUTD Ranked Amongst Top International Scientists



In the 2022 Edition of their Ranking of Top 1000 Scientists, leading academic platform for researchers, [Research.com](#), honoured SUTD faculty members alongside the top international scientists in the field of Electronics and Electrical Engineering, Computer Science and Engineering and Technology.

Engineering and Technology	Electronics and Electrical Engineering	Computer Science
Prof Phoon Kok Kwang	Prof Yeo Kiat Seng	Prof Tony Quek
Assoc Prof Duan Ling Jie	Prof Tony Quek	Prof Aditya P Mathur
	Assoc Prof Yuen Chau	Prof Zhou Jiangying
		Prof David Yau
		Assoc Prof Yuen Chau
		Asst Prof Soujanya Poria

More information can be found [here](#)

Spotlight Award at NeurIPS 2021



Assoc Prof Georgios Piliouras (ESD) and Research Fellow Stefanos Leonardos (ESD) published a study titled ‘Exploration-Exploitation in Multi-Agent Competition: Convergence with Bounded Rationality’ together with Kelly Spendlove from the University of Oxford and received the Spotlight Award at NeurIPS Conference 2021. Their paper was listed among the top 3% out of the 9000 submissions received.

More information can be found [here](#)

Research Achievements

TimeScapes Nominated as the Building of the Year 2022



The TimeScapes, also known as SUTD 10th Anniversary Pavilion, was nominated as the Building of the Year 2022 by ArchDaily. Timescapes is a 3D printed pavilion that commemorates the 10th Anniversary of the SUTD. It preserves and exhibits the university's most significant innovations and milestones over the past decade, with a design that coordinates form and materials to reflect the ambitious and adventurous spirit of the young university.

More information can be found [here](#)

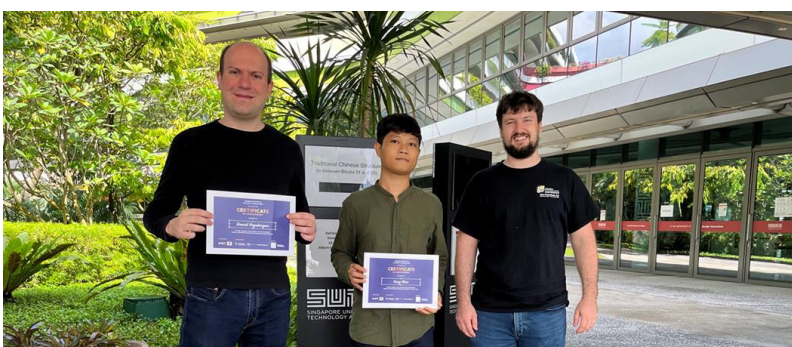
Future of Us Pavilion Honoured with Multiple Accolades



Prof Thomas Schroepfer (ASD) and the Advanced Architecture Lab won the following awards for The Future of Us Pavilion. Located between Marina Bay Sands and Gardens by the Bay, the pavilion consists of around 11,000-unique perforated aluminium panels fused together to simulate the experience of walking under a tropical foliage both in form and function.

- The Architecture Community ([Link](#))
- LOOP Design Awards ([Link](#))
- Built Design Awards ([Link](#))
- The Architecture MasterPrize ([Link](#))

ISTD Researchers Won SBIP Hackathon



Asst Prof Dinh Tien Tuan Anh's (ISTD) research team, comprising Daniel Petrus Reijsbergen and Aung Maw, won the first prize (Enthusiast Track) at the Singapore Blockchain Hackathon 2021. As part of their project, they implemented an interoperability solution for existing blockchains and demonstrated it with two applications: cross-chain auction and cross-chain flash loan.

More information can be found [here](#)

Assoc Prof Yow Elected to the SRCD Publications Committee



Assoc Prof Yow Wei Quin (HASS) was elected to the SRCD Publications Committee to chair the Open Science Subcommittee from 2021-2025. The SRCD publishes the top 10% journals in developmental sciences and promotes the use of developmental research to improve human lives.

More information can be found [here](#)

Research Achievements

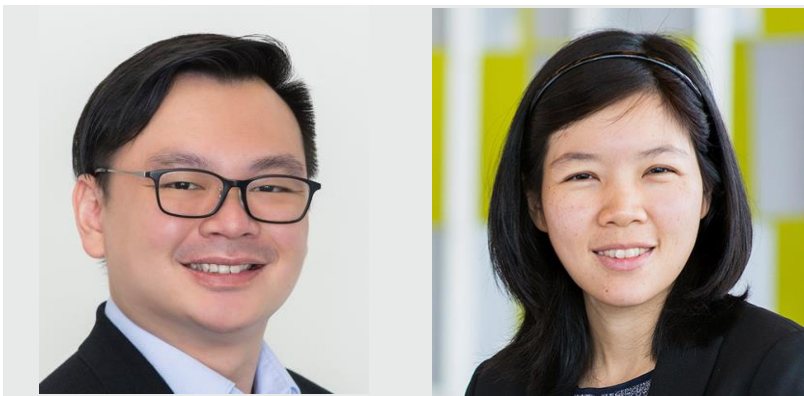
Asst Prof Valdivia y Alvarado Elevated to Senior Member of IEEE 2022



Asst Prof Pablo Valdivia y Alvarado (EPD) was elevated to the grade of Senior Member of IEEE, the highest professional grade, in recognition of his extensive experience and professional accomplishments. He was part of the top 10% of around 400,000 members who achieved this honour.

More information on his research can be found [here](#)

Google exploreCS Research Award



Asst Prof Roy Lee (ISTD) and Assoc Prof Lynette Cheah (ESD) were honourable recipients of the Google exploreCS Research award 2021. Since 2018, the exploreCSR awards have supported institutions to design and host research-focused initiatives during the academic year that expose students from marginalised groups to computing research methodologies, career pathways, and exploratory problems.

More information can be found [here](#)

Best Paper Award – Honourable Mention at the ACM ICMI 2021

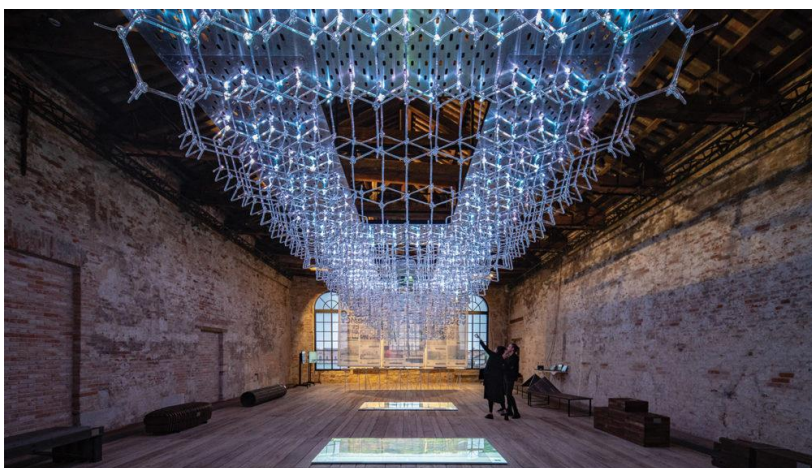


Asst Prof Soujanya Poria (ISTD) was awarded best paper award honorable mention at International Conference on Multimodal Interface (ICMI) 2021.

The 23rd ACM International Conference on Multimodal Interaction (ICMI 2021) was held in Montreal, Canada. ICMI is the premier international forum for multidisciplinary research on multimodal human-human and human-computer interaction, interfaces, and system development.

More information can be found [here](#)

SIA Design Award 2021 for Singapore Pavilion



Delight: Singapore Pavilion, co-designed by Lecturer Jason Lim (ASD) for the Venice Biennale, was awarded the SIA Architectural Design Award, Interior Architecture category - one of only five given out that year. The SIA Architectural Design Awards series is the most prestigious award conferred by the Singapore Institute of Architects (SIA) to promote and encourage distinction in architectural design.

More information can be found [here](#)



ASPIRE

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