

ASIM 2026 16 - 18 Nov Singapore

PROGRAMME BOOKLET

ASIAN CONFERENCE OF THE

6th International Building Performance Simulation Association

Towards a

Smart and Carbon Neutral Future

16–18 November 2026

SDE1 & 3 and SDE4, College of Design and Engineering
National University of Singapore · Singapore

NUS National University of Singapore

International Building Performance Simulation Association

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Topic legend

Code	Topic
CLIMATE	Carbon Neutral Buildings and Climate Action
DATA	Data-driven Modelling (Machine Learning, AI)
ENERGY	Energy Efficiency and Retrofitting
GRID	Smart Grids and Energy Management Systems
IEQ	Indoor Environmental Quality
SIM	Building and Urban-Scale Performance Simulation

The combined session CLIMATE+ENERGY05 draws from two topics and is not a seventh category.

Welcome message

On behalf of the ASim 2026 Organising Committee, I am delighted to welcome you to Singapore and the National University of Singapore.

ASim continues to serve as an important forum for advancing building performance simulation in Asia while fostering connections with the wider international community. Hosting ASim 2026 in Singapore provides a fitting setting for discussions on the challenges of dense urban development, tropical climates, energy efficiency, occupant wellbeing and the practical application of research to create more sustainable and resilient buildings.

Over the next three days, our programme brings together keynote addresses, invited talks, parallel technical sessions, poster presentations and workshops. Beyond the formal programme, I hope you will find opportunities to exchange ideas, challenge assumptions, reconnect with colleagues and establish new collaborations.

We place particular importance on supporting students and early-career researchers. Conferences such as ASim are not only opportunities to present research, but also to seek constructive feedback, learn from different perspectives, find mentors and collaborators, and develop lasting connections within our community. I encourage everyone to make the most of these opportunities.

My sincere thanks go to our speakers, authors, reviewers, session chairs, workshop organisers, sponsors, exhibitors, volunteers and institutional partners. Their dedication and contributions have made this conference possible. I would also like to thank all participants for bringing your expertise, curiosity and enthusiasm to ASim 2026.

I wish you an inspiring and productive conference, and an enjoyable stay in Singapore.

Adrian Chong
General Chair, ASim 2026
National University of Singapore

Programme at a glance

Scan the QR code for the detailed programme and all paper abstracts, or visit ConfTool: https://www.conftool.com/asim2026/sessions.php

Day 1 · 16 November 2026

Time	Track 1 Design Lecture Theatre 421	Track 2 Design Lecture Theatre 422	Track 3 Design Lecture Theatre 423	Track 4 Seminar Room 8	Track 5 Seminar Room 5-6	Track 6 Seminar Room 3-4
07:30–08:30	Breakfast and Registration · Open Space outside LT421					
08:30–08:45	Opening Address and Platinum Sponsor Addresses · Design Lecture Theatre 421					
08:45–09:45	Opening Keynote - Mr. Tan Sze Tiong · Design Lecture Theatre 421					
09:45–10:00	Morning Coffee Break · Open Space outside LT421					
10:00–10:30	INVITED TALK Shohei Miyata Design Lecture Theatre 421	INVITED TALK Xin Zhou Design Lecture Theatre 422	INVITED TALK Federico Tartarini Design Lecture Theatre 423			
10:30–10:45	Session Changeover					
10:45–12:15	DATA01 Data and AI SPONSOR SESSION DesignBuilder · 30 min	SIM01 Building Simulation SPONSOR SESSION IES-VE · 60 min	IEQ01 Indoor Environmental Quality INDUSTRY WORKSHOP 60 min	GRID01 Smart Grids	CLIMATE01 Climate Action	ENERGY01 Energy Efficiency
12:15–13:15	Poster Session & Lunch Break · Open Space outside LT421					
13:15–14:45	DATA02 Data and AI	SIM04 Building Simulation	SIM03 Building Simulation	SIM02 Building Simulation	CLIMATE02 Climate Action	DATA03 Data and AI
14:45–15:00	Session Changeover					
15:00–16:30	DATA05 Data and AI	SIM06 Building Simulation	SIM05 Building Simulation	IEQ02 Indoor Environmental Quality	DATA04 Data and AI	ENERGY02 Energy Efficiency
16:30–16:45	Afternoon Coffee Break · Open Space outside LT421					
16:45–18:15	DATA07 Data and AI	SIM08 Building Simulation	SIM07 Building Simulation	IEQ03 Indoor Environmental Quality	DATA06 Data and AI	ENERGY03 Energy Efficiency
18:15–19:15	Welcome Reception · SDE4 Open Plaza					

Day 2 · 17 November 2026

Time	Track 1 Design Lecture Theatre 421	Track 2 Design Lecture Theatre 422	Track 3 Design Lecture Theatre 423	Track 4 Seminar Room 8	Track 5 Seminar Room 5-6	Track 6 Seminar Room 3-4
08:30–09:30	Keynote Address 2 - Prof. Cheol-Soo Park · Design Lecture Theatre 421					
09:30–09:45	Morning Coffee Break · Open Space outside LT421					
09:45–10:15	INVITED TALK Filip Biljecki Design Lecture Theatre 421	INVITED TALK Dorit Aviv Design Lecture Theatre 422	INVITED TALK Marco Savino Piscitelli, PhD Design Lecture Theatre 423	INVITED TALK Jungmin Han Seminar Room 8		
10:15–10:30	Session Changeover					
10:30–12:15	DATA+SIM08 Data and AI + Building Simulation	SIM09 Building Simulation	GRID02 Smart Grids	IEQ04 Indoor Environmental Quality	CLIMATE03 Climate Action	ENERGY04 Energy Efficiency
12:15–13:15	Lunch Break · Open Space outside LT421					
13:15–14:45	DATA09 Data and AI	SIM10 Building Simulation	DATA10 Data and AI	IEQ05 Indoor Environmental Quality	CLIMATE04 Climate Action	ENERGY05 Energy Efficiency
14:45–15:00	Session Changeover					
15:00–16:30	DATA11 Data and AI	DATA+IEQ12 Data and AI + Indoor Environmental Quality	SIM11 Building Simulation	IEQ06 Indoor Environmental Quality	CLIMATE+ENERGY05 Climate Action + Energy Efficiency	GRID+ENERGY06 Smart Grids + Energy Efficiency
16:30–16:45	Afternoon Coffee Break · Open Space outside LT421					
16:45–17:45	Keynote Address 3 - Prof. Holly Samuelson · Design Lecture Theatre 421					
17:45–19:00	Transfer to Conference Dinner Venue · SDE3 Foyer (Level 1 Pick Up Point)					
19:00–21:30	Conference Dinner and Awards · Pan Pacific Singapore					

Day 3 · 18 November 2026

Time	Track 1 Executive Room 1-2	Track 2 Seminar Room 8	Track 3 Seminar Room 5-6	Track 4 Open Space outside LT421
09:30–11:30	**Workshop 1** Zero Energy Building Trends in Asian Countries	**Workshop 2** Does the Model Change Anything? UBEM at Decision Scale	**Workshop 3** Urban and Building Resilience for Heat and Haze	
11:30–12:30	**Lunch Break · Open Space outside LT421**			
12:30–14:30	**Workshop 5** Japan-Korea-Singapore Workshop on Membrane-Based Humidity Control for Sustainable HVAC Systems	**Workshop 4** Bits4Watts Workshop 2026: 2nd International Workshop on Low-Carbon Building and Urban Energy Systems Powered by Data, AI, and Smart Controls		
14:30–15:00	**Afternoon Coffee Break · Open Space outside LT421**			
15:00–17:00	**Technical tour** NUS Living Lab Tour: SDE4 Net-Zero Energy Building	**Workshop 6** AI in Research and Education: Methodology and Responsibility		**Technical tour** NUS Living Lab Tour: Sustainability, Sensing, and the Smart Campus

Getting to the venue

Shuttle bus for hotel delegates

Free shuttle buses run between the conference and The Ridge at NUS, Citadines Science Park and Citadines Connect Rochester.

Date	From The Ridge	From Citadines Science Park and Citadines Connect Rochester	Back to all three hotels
Mon 16 Nov	07:15	07:00	19:15 from SDE3
Tue 17 Nov	08:00	07:45	From Pan Pacific Singapore, after the conference dinner
Wed 18 Nov	09:00	09:00	17:15 from SDE3

By MRT

- Take the Circle Line to **Kent Ridge (CC24)** and leave the station by **Exit A**.
- Board the free **NUS Internal Shuttle Bus K** at bus stop 18331, just outside Exit A.
- Ride 6 stops and alight at the stop **opposite SDE3**, then cross the bridge to SDE3.
- From Clementi MRT (East-West Line), public bus 96 or 183 also serves the campus.

By taxi or private hire car

Taxis are widely available, and Grab, Gojek, Tada and Ryde operate in Singapore. Ask to be dropped off at:

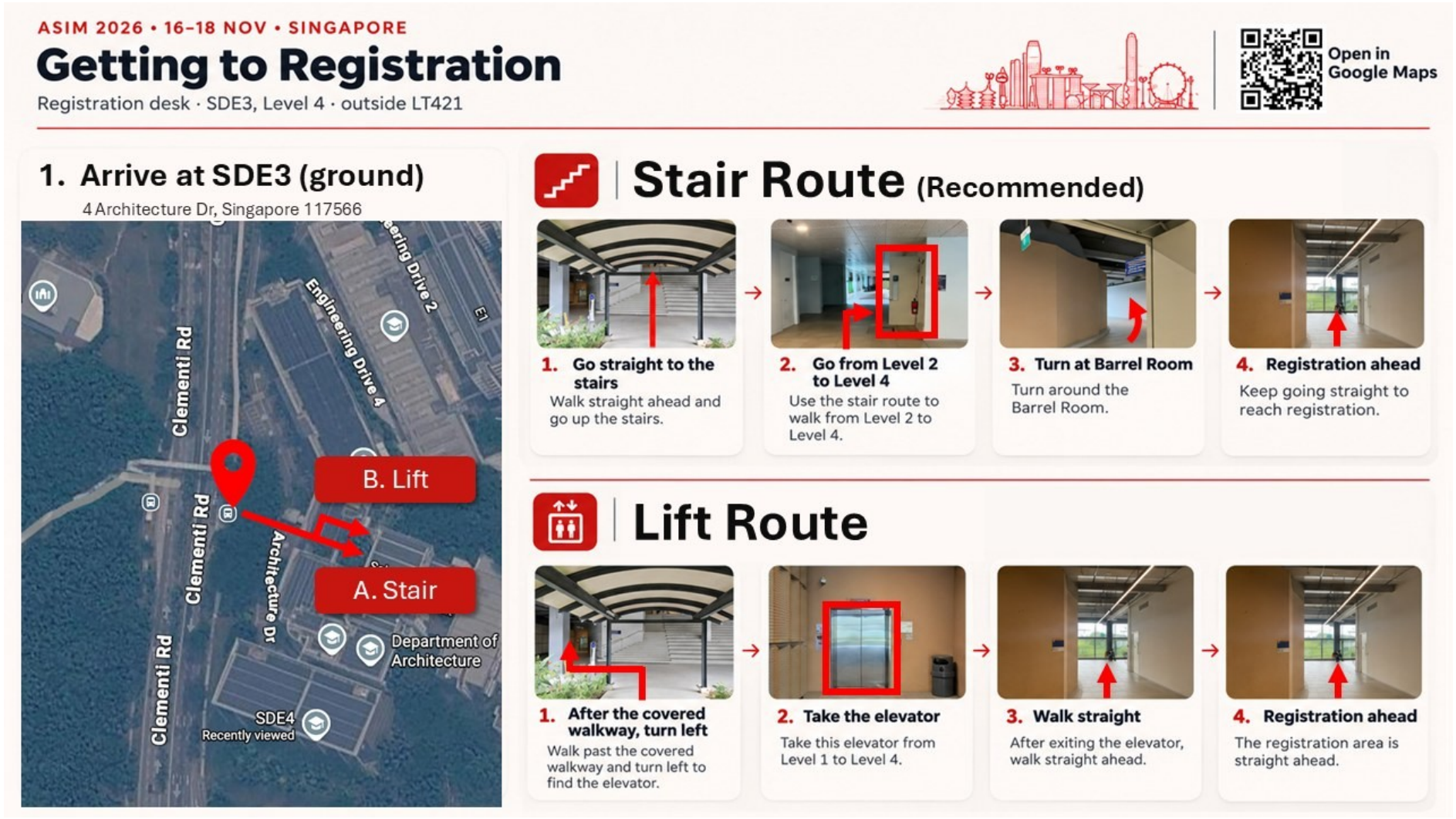
- **Main conference venue:** SDE3, College of Design and Engineering, 4 Architecture Drive, Singapore 117566
- **Welcome reception (Day 1):** SDE4 Open Plaza, College of Design and Engineering, 8 Architecture Drive, Singapore 117356

By car

Enter the Kent Ridge campus by **Entrance B (Kent Ridge Crescent)** and park at **Carpark 1**. Kent Ridge Crescent is reached from Clementi Road, via the AYE or the West Coast Highway.

From SDE3 to registration

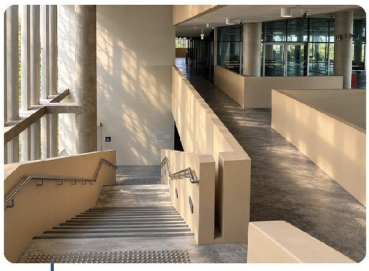
Registration desk opens Day 1 (16 November) from 07:30 and Day 2 (17 November) from 08:00.



Wayfinding map

LT = Design Lecture Theatre; SEM = Seminar Room; EXEC RM = Executive Room. Registration, coffee breaks, lunch and the posters are in the Open Space outside LT421 (SDE3, Level 4).

SDE4 staircase Stairs down to SDE4 Open Plaza, Level 3

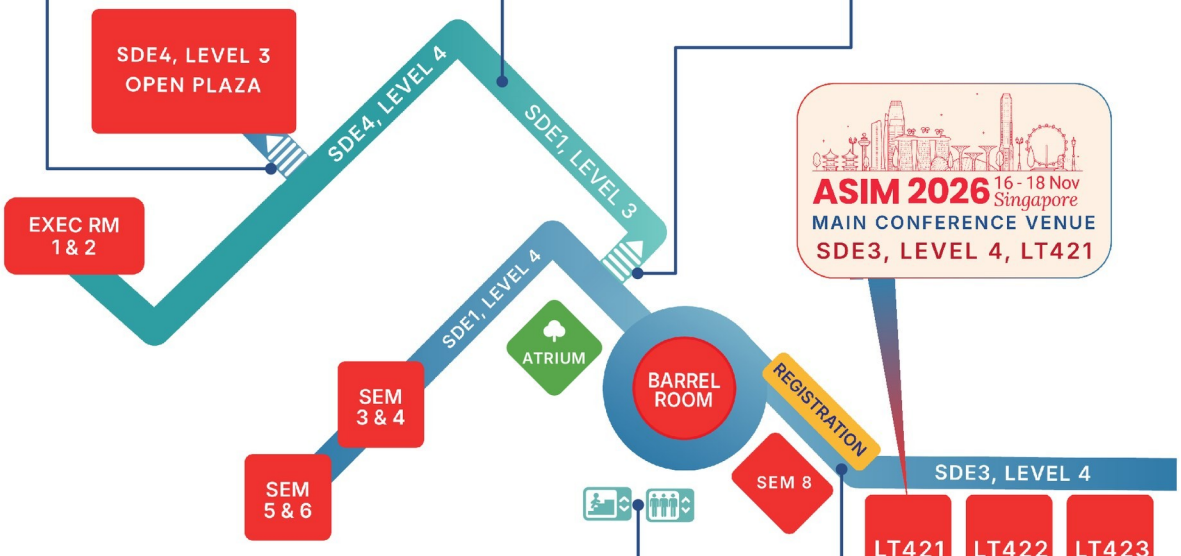


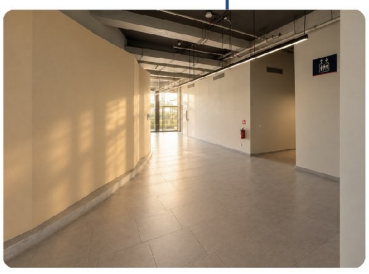
Bridge SDE1, Level 3 to SDE4, Level 4 and Executive Room 1-2



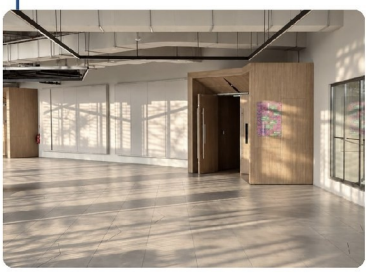
SDE1 staircase Stairs down to SDE1, Level 3







Lift area View from the lifts and stairwell



Registration Looking towards the main conference venue

Sponsors at a glance

Platinum sponsor

IES

Gold sponsor

DesignBuilder

Silver sponsors

EKO

Building System and Diagnostics Pte Ltd (BSD)

ENVEA

Tian Building Engineering

Conference overview

ASim 2026, the 6th Asian Conference of the International Building Performance Simulation Association, will be held from 16 to 18 November 2026 at the National University of Singapore. Following ASim 2024 in Osaka, the biennial conference continues to bring together researchers, academics and industry practitioners from across Asia and beyond.

Under the theme Towards a **Smart and Carbon Neutral Future**, ASim 2026 explores how building performance simulation, emerging technologies and innovative design and operational strategies can contribute to more sustainable and resilient buildings and cities. The conference features keynote and invited talks, technical paper presentations, workshops and technical tours, providing a platform for knowledge exchange and international collaboration.

The venue, SDE1 & 3 and SDE4, forms part of NUS's first building cluster targeting net-zero performance. Its setting provides a relevant backdrop for discussions about building performance, decarbonisation and the translation of research into practice.

Core Organising Committee



Adrian Chong
General Chair
National University of Singapore



Clayton Miller
Scientific Programme Co-Chairs
Singapore Management University



Steve Kardinal Jusuf
Scientific Programme Co-Chairs
Singapore Institute of Technology



Daniel Wong Hwee Boon
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Ang Yu Qian
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Maomao Hu
Workshop Co-Chairs
National University of Singapore



Tsubasa Bolt
Workshop Co-Chairs
ASHRAE Singapore

Scientific Committee

Topic Chairs

CLIMATE — Carbon Neutral Buildings and Climate Action

- Kai Zheng — Singapore University of Technology and Design, Singapore
- Shohei Miyata — The University of Tokyo

DATA — Data-driven Modelling (Machine Learning, AI)

- Wei Liang — National University of Singapore, Singapore

ENERGY — Energy Efficiency and Retrofitting

- Makiko Ukai — Nagoya University

GRID — Smart Grids and Energy Management Systems

- Zhe Wang — Hong Kong University of Science and Technology

IEQ — Indoor Environmental Quality

- Muhammad Nur Fajri Alfata — Ministry of Public Works, Indonesia

SIM — Building and Urban-Scale Performance Simulation

- Jingjing An — Beijing University of Civil Engineering and Architecture

Members

Akihito Ozaki — Kyushu University
Apiparn Borisuit — Chulalongkorn University
Atch Sreshthaputra — Chulalongkorn University
Cheng Fan — Shenzhen University
Cheol-Soo Park — Seoul National University
Cui Li — Tongji University
Da Yan — Tsinghua University
Daisuke Sumiyoshi — Kyushu University
Deuk-Woo Kim — Korea Institute of Civil Engineering and Building Technology
Dong Hwa Kang — University of Seoul
Eikichi Ono — Kajima
Eisuke Togashi — Kogakuin University
Fauzan Alfi Agirachman — Institut Teknologi Bandung
Genku Kayo — Hosei University
Gongsheng Huang — City University of Hong Kong
Gyuyoung Yoon — Nagoya City University
Hee Joo Poh — National University of Singapore
Hongyuan Jia — Chongqing University of Science and Technology
Hui An — Singapore Institute of Technology
Maomao Hu — National University of Singapore
Masato Miyata — National Institute for Land and Infrastructure Management
Masaya Okumiya — Nagoya Industrial Science Research Institute
Michael Kent — Singapore University of Social Sciences
Mingyang Qian — Donghua University
Minki Sung — Sejong University
Myoung-Souk Yeo — Seoul National University
Nedyomukti Imam Syafii — Universitas Gadjah Mada
Rajan Rawal — CEPT University
Riccardo Talami — Nanyang Technological University
Rizki A. Mangkuto — Institut Teknologi Bandung
Rongpeng Zhang — Hunan University
Satoru Iizuka — Nagoya University
Sayaka Kindaichi — Hiroshima University
Shanshan Shi — Nanjing University
Sicheng Zhan — The University of Hong Kong
Suhendri Suhendri — Institut Teknologi Bandung
Szu-Cheng Chien — Singapore Institute of Technology
Taeyeon Kim — Yonsei University

Hyeun Jun Moon — Dankook University
Jaehan Lim — Ewha Womans University
Jae-Weon Jeong — Hanyang University
Jianli Chen — Tongji University
Jianlin Liu — Donghua University
Jihui Yuan — Osaka Metropolitan University
Jing Liu — Harbin Institute of Technology
Jiying Liu — Shandong Jianzhu University
Jung Min Han — Yonsei University
Junseok Park — Hanyang University
Keiichiro Taniguchi — The University of Tokyo
Ki Uhn Ahn — Korea Institute of Civil Engineering and Building Technology
Kyu-Nam Rhee — Pukyong National University
Linda Xiao — Hong Kong Polytechnic University
Lup Wai Chew — National University of Singapore
Mao Serikawa — Kanagawa University
Takashi Asawa — Institute of Science Tokyo
Wenxin Li — Southeast University
Xiaofeng Li — Tsinghua University
Xilei Dai — Chongqing University
Xin Zhou — Southeast University
Xue Liu — Southwest Jiaotong University
Yang Zhao — Zhejiang University
Yashkumar Shukla — CEPT University
Yeonsook Heo — Korea University
Yixing Chen — Hunan University
Yohei Yamaguchi — Osaka University
Ang Yu Qian — National University of Singapore
Yue Lei — National University of Singapore
Zhe Tian — Tianjin University
Zhiang Zhang — University of Nottingham Ningbo
Zhonghua Gou — Wuhan University

Conference Secretariat

- ASim 2026 Organising Committee — asim2026@nus.edu.sg

Host institution

Organised by: Department of the Built Environment, College of Design and Engineering, National University of Singapore

Keynote speakers

KEYNOTE

Tan Sze Tiong



Chief Sustainability Officer and Group Director, Building & Research Institute — Housing & Development Board, Singapore

HDB's Sustainability Journey: From Innovation to Implementation

Chair: Khee Poh Lam

Mr Tan Sze Tiong is the Chief Sustainability Officer of Singapore's Housing & Development Board and Group Director of its Building & Research Institute. He leads HDB's efforts in spearheading innovative, cost-effective solutions and technologies to create a better living environment and achieve greater sustainability.

Abstract

As Singapore advances towards its Net Zero ambitions, HDB plays a key role in integrating sustainability into public housing at unprecedented scale. This sharing outlines HDB's holistic approach to sustainable urban development. HDB's carbon reduction roadmap and strategies to enhance liveability across our housing estates will be outlined, alongside the complex challenges of retrofitting existing towns to meet tomorrow's sustainability standards. Throughout this journey, HDB offers practical insights and lessons learnt in translating sustainability research and innovation into real-world impact, contributing meaningfully to Singapore's vision of a smart and net zero future.

KEYNOTE

Cheol-Soo Park



Professor — Seoul National University

From Correlation to Causality: Real-World AI Cases and Challenges in HVAC Operation

Chair: Da Yan

Professor Cheol-Soo Park is widely recognized on the global stage in the field of building performance simulation. Over the past decades, he has presented groundbreaking and innovative ideas through high-impact journal publications and conferences, making a significant and lasting impact on the IBPSA community. Professor Park and his research team have earned numerous prestigious awards both nationally and internationally. His recent work focuses on AI-driven HVAC operations and the development of simplified modeling tools aimed at driving the widespread adoption of dynamic building simulation across academia, industry, and research sectors.

Abstract

Over the past two decades, artificial intelligence has advanced at a breathtaking pace and is now being actively applied to building HVAC operations. However, several critical hurdles remain before AI can achieve widespread, universal adoption in the building sector. In this keynote address, key methodologies designed to overcome these challenges will be introduced, including hybrid AI, reduced-order AI, graphical guidance AI, and federated AI. In addition, real-world implementation cases from both residential and non-residential buildings in South Korea will be presented, highlighting their potential for energy savings. Furthermore, the vital role of Causal AI in ascending to the "third rung of the ladder" of causation will be emphasized, as articulated by Judea Pearl in The Book of Why. This demonstrates how black-box models can evolve into physically robust, highly explainable AI models grounded in causality. As Alan Turing famously remarked, "the machine learnt so slowly that it needed a great deal of teaching." By acknowledging this insight, we will come to appreciate that we have entered an era where AI and human intelligence actively instruct and enrich one another.

KEYNOTE

Holly Samuelson



Associate Professor — Massachusetts Institute of Technology

Designing Livable Futures

Chair: Clayton Miller

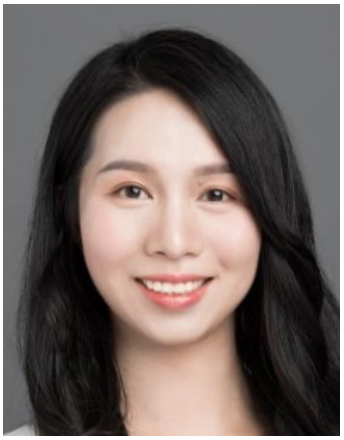
Holly Samuelson is an Associate Professor in Building Technology at the Massachusetts Institute of Technology. At MIT, she directs the Livable Spaces Lab, an interdisciplinary research group. The lab combines computational and experimental methods to tackle urgent challenges, including heat vulnerability, thermal resilience, carbon emissions, and the future of building design in evolving energy systems. Before joining MIT, she practiced architecture, consulted for the building industry, and taught at Harvard University. Dr. Samuelson has authored more than 60 peer-reviewed publications and received the Best Paper Award from the journal Energy and Buildings and the Outstanding Young Contributor Award from the International Building Performance Simulation Association, USA.

Abstract

As buildings account for a significant share of global emissions and climate impacts intensify, the question is no longer whether we should design differently, but how. Building simulation tools have evolved from energy calculators into powerful instruments for integrated decision-making. This keynote explores how advanced simulation methods can address interconnected challenges of thermal resilience, occupant health, embodied and operational carbon, and grid decarbonization. Design choices that enhance occupant comfort and health can also reduce emissions and strengthen building climate resilience. The talk highlights how simulation-informed design creates more livable, sustainable built environments by evaluating the co-benefits of energy efficiency and occupant well-being.

Invited speakers

Xin Zhou



Associate Professor — School of Architecture, Southeast University

Talk: Urban Residential Cooling Beyond Efficiency: Demand Heterogeneity, Sufficiency, and Flexibility

Chair: Yohei Yamaguchi

Biography: Xin Zhou is an Associate Professor at the School of Architecture, Southeast University. Her research focuses on building and urban energy modeling, occupant behavior, building energy sufficiency and flexibility, and multi-scale building performance simulation. She serves as a Subject Editor of Building Simulation and an Editorial Board Member of Energy and Buildings, and is a voting member of ASHRAE SSPC 140 and TC 7.10. She received the IBPSA Outstanding Young Contributor Award in 2019.

Abstract: Urban residential cooling demand is shaped not only by building physics, but also by heterogeneous occupant behavior and how cooling supply is matched to actual needs. This presentation introduces a bottom-up urban building energy modeling framework that integrates building physics, occupant AC-use behavior, supply-demand matching, and demand response. Using residential cooling as a case study, it examines how different levels of energy sufficiency affect urban cooling consumption, peak loads, and demand heterogeneity, and further discusses the trade-off between reducing baseline energy demand and maintaining short-term demand flexibility.

Shohei Miyata



Project Lecturer — Department of Architecture, School of Engineering, The University of Tokyo

Talk: Concretization and Abstraction: Two Modelling Perspectives for Smart Buildings

Chair: Adrian Chong

Biography: Dr. Shohei Miyata is a Project Lecturer in the Department of Architecture, School of Engineering, The University of Tokyo, a position broadly comparable to Assistant Professor in the U.S. His research focuses on HVAC systems and smart buildings, with particular interests in system emulation, control optimization, fault detection and diagnosis, and semantic technologies. He has received several best paper awards from SHASE, AIJ, and previous ASim conferences. He also served as a Co-Chair of ASim2024, held in Osaka, Japan.

Abstract: Smart buildings require both advanced control technologies and scalable deployment of diverse applications. These two goals call for seemingly contrasting modelling approaches. Detailed simulation and

emulation provide concrete representations of building systems for developing and testing advanced controls, while semantic and data models abstract system-specific information to enable interoperability and scalable applications. Drawing on our research spanning both perspectives, this talk explores the roles of concretization and abstraction in modelling HVAC systems, with reference to recent developments in Japan. It discusses how these complementary approaches can shape the future of smart building research and practice.

Federico Tartarini



Senior Lecturer — School of Architecture, Design and Planning, The University of Sydney

Talk: From sensation to strain: choosing the right thermal model

Chair: Bowen Du

Biography: Federico Tartarini is a Senior Lecturer in the School of Architecture, Design and Planning at the University of Sydney and recipient of the 2025 ASHRAE Ralph G. Nevins Physiology & Human Environment Award. His research spans thermal comfort and heat-health across diverse populations. He develops globally used open-source tools, including pythermalcomfort and HeatWatch, and contributes to the Lancet Countdown on health and climate change. He proposes "fan-first" cooling in buildings as a primary strategy for a warming world.

Abstract: Current building performance simulations primarily assess occupants using thermal sensation models. However, tested against large field datasets, standard PMV formulations predict sensation correctly only about a third of the time, and were never designed to evaluate thermal safety. This talk separates thermal sensation from physiological strain, clarifies when each model applies, and demonstrates how thermophysiological models can be computed directly from simulation outputs using open-source tools. It concludes by advocating for air movement as a primary cooling strategy and poses open questions for the IEQ community in a warming climate.

Filip Biljecki



Associate Professor — National University of Singapore

Talk: Building Open-Source Tools for Sustainable Urban Informatics

Chair: Clayton Miller

Biography: Filip Biljecki is an Associate Professor at the NUS Department of Architecture. He received his PhD and MSc from TU Delft. His research and teaching integrate urban data science, geomatics, and geospatial technologies to advance urban digital twins and data-driven urban planning. Filip serves the community through associate editor roles in two journals: Computers, Environment and Urban Systems & Landscape and Urban Planning.

Abstract: The Urban Analytics Lab at the National University of Singapore has a holistic commitment to urban informatics: not just conducting analytical research but building an ecosystem that supports sustainable and human-centered development of the field and cross-pollination with other domains. This agenda includes

foundational research such as advancing data quality assessments, open data benchmarking, and investigations on crowdsourcing, alongside structural developments including tools, datasets, standards, and community initiatives. This presentation will focus on the group's open science efforts, and it will provide a high-level overview of recent open-source software, open datasets, and other initiatives fostering reproducibility.

Dorit Aviv



Associate Professor — University of Pennsylvania Weitzman School of Design

Talk: Designing Thermal Resilience

Chair: Holly Samuelson

Biography: Dorit Aviv is an Associate Professor of Architecture at the University of Pennsylvania's Weitzman School of Design, where she directs the Thermal Architecture Lab. Her research explores innovative approaches to cooling buildings and cities, integrating architectural design, thermodynamics, and materials science. Aviv is a licensed architect and holds a PhD in Architectural Technology from Princeton University. Her built prototypes for passive and low-energy cooling have received major awards, including a Holcim Award for Sustainable Construction in 2021 and an AIA New York State Design Award in 2026.

Abstract: The increasing frequency and intensity of heat waves have made extreme heat the deadliest climate-related hazard globally, disproportionately affecting vulnerable urban communities. As architects, engineers, and building scientists grapple with the challenge of keeping people cool, considerations of resilience, carbon footprint, and social impact must remain central to the development of cooling solutions, alongside technological innovation. This talk will present three projects that address urban heat through architectural design, modeling, prototyping, and testing in real-world environments, exploring how collaboration with communities and civic partners can inform the development of more resilient and sustainable approaches to cooling.

Marco Savino Piscitelli, PhD



Assistant Professor — Politecnico di Torino, Department of Energy, BAEDA Lab

Talk: Advancing energy management in buildings by coupling semantic technologies and AI

Chair: Maomao Hu

Biography: Marco Savino Piscitelli is an Assistant Professor in Building Physics at the Department of Energy, Politecnico di Torino. After graduating in Building Engineering in 2014, he began his PhD in Energetics and visited The Hong Kong Polytechnic University in 2018. Named a Siebel Scholar in 2019, he earned his PhD in 2020. He is Operation Manager of the BAEDA Lab, focused on AI-based decision support for building energy management, and teaches HVAC system management and building automation.

Abstract: Building energy management increasingly relies on data scattered across automation systems, sensors, models, and technical documentation. This fragmentation limits the scalable deployment of advanced analytics, control, and decision support. This presentation explores how semantic technologies and AI can tackle the problem together. Ontologies and knowledge graphs offer a machine-interpretable representation of building systems, data, and application requirements, while LLM-based agents help create semantic models, configure applications, query data, and interpret analytical results. At the same time, semantic models ground AI in building-specific context, making energy management applications more reliable, interpretable, and portable.

Jungmin Han



Assistant Professor — Department of Architecture and Architectural Engineering, Yonsei University

Talk: When Simulation Becomes a Design Partner: Physics, AI, and Quantum Models Across Scales

Chair: Yu Qian Ang

Biography: Ellie Jungmin Han is an Assistant Professor at Yonsei University and a former lecturer at Harvard GSD and fellow at the Harvard Center for Green Buildings and Cities. She holds a Doctor of Design from Harvard GSD. Her research combines physics-based simulation, AI, and quantum methods for sustainable buildings and cities, focusing on urban energy modeling, digital twins, retrieval-augmented design reasoning, and optimization to connect performance prediction with architectural decisions.

Abstract: How can building simulation become an active design partner? This invited talk presents research at Yonsei University’s DataXDesign Lab integrating physics-based simulation, artificial intelligence, and emerging quantum methods across buildings, campuses, and cities. Applications include urban energy modeling, campus digital twins, retrieval-augmented design reasoning, and quantum optimization for microgrid energy allocation. Surrogate models and climate-informed design tools connect performance prediction with architectural decisions. Addressing calibration, uncertainty, and physical consistency, the talk explores how knowledge retrieval, simulation, and optimization can jointly support sustainable design and operation.

Workshops and industry sessions

The six Day 3 workshops below are separate from the sponsor programme items embedded within the Day 1 and Day 2 parallel sessions, shown afterwards on this page run. Both are also shown, in scheduling-summary form only, in Programme at a glance and the detailed programme.

Day 3 workshops

Workshop 1 · 18 November 2026, 09:30–11:30 · Executive Room 1-2

Zero Energy Building Trends in Asian Countries

Chair: Gyuyoung Yoon, Nagoya City University

Speakers:

- Masato Miyata – Head, Housing Stock Management Division, National Institute for Land and Infrastructure Management (NILIM)
- Hiroki Kato – Section Manager, Mechanical & Electrical Design Department, Obayashi Corporation
- Xuyuan Kang – Associate Professor, University of the Chinese Academy of Sciences
- Mingyang Qian – Lecturer, Donghua University
- Hyeong-Gon Jo – Postdoctoral Fellow, Seoul National University
- Ki-Uhn Ahn – Senior Researcher, Korea Institute of Civil Engineering and Building Technology
- Deuk-Woo Kim – Senior Researcher, Korea Institute of Civil Engineering and Building Technology
- Stephen Tay En Rong – Associate Professor, National University of Singapore
- Muhammad Nur Fajri Alfata – Senior Research Engineer, Division of Building Sciences, Ministry of Public Works of the Republic of Indonesia

About the workshop

Asian countries have established roadmaps toward carbon neutrality and are actively advancing related initiatives. From a global perspective, the building sector—being one of the largest consumers of energy—faces an urgent need to improve energy efficiency and reduce CO_2 emissions. Against this background, many countries have introduced building-related regulations, and discussions are underway regarding evaluation methods and design approaches for energy-efficient buildings. Based on these frameworks, Zero Energy Buildings (ZEB) are being realized, and further developments toward Zero Emission Buildings are also being explored. Therefore, this workshop will introduce trends in regulations toward energy conservation in buildings in Asian countries, present examples of ZEBs (representative of energy-saving and CO2-reducing buildings), and discuss the decarbonization of buildings in East and Southeast Asia where cooling, dehumidification, heating, and humidification are necessary.

Workshop 2 · 18 November 2026, 09:30–11:30 · Seminar Room 8

Does the Model Change Anything? UBEM at Decision Scale

Chairs: Yu Qian Ang, National University of Singapore; Xin Zhou, Southeast University

Speakers:

- Christoph Reinhart – Professor, Massachusetts Institute of Technology, USA

- Jianxiang Huang – Professor, Tsinghua-Shenzhen, China
- Xin Zhou – Associate Professor, Southeast University, China
- Tao Wang – Assistant Professor, The University of Hong Kong
- Yu Qian Ang – Assistant Professor, National University of Singapore

About the workshop

Urban Building Energy Modelling (UBEM) has passed its proof-of-concept phase. City-scale models now exist for hundreds of cities, and open workflows – e.g. UBEM.io, national building stock models, and MIT's Global Building Inventory (GloBI) – have made model generation close to routine. The binding constraint has shifted. The interesting question is no longer whether we can simulate 100,000 buildings, but whether the resulting model changes what a planner, regulator, or portfolio owner actually decides.
This session puts that question to teams who have taken UBEM into live decision settings. Asia sharpens the problem: cooling-dominated, high-density vertical stock; growth and rapid stock turnover rather than deep retrofit; fragmented or access-restricted data; and policy instruments quite unlike the retrofit-and-grant context most UBEM tooling was built around. Whether methods developed for Boston, London or Zurich transfer to Singapore, Hong Kong and secondary Asian cities is an open empirical question, and this region (at ASIM) is best placed to answer it
Each speaker presents one deployed use case against a common template: the decision at stake, the data actually available, the compromises made, what the model influenced, and what it got wrong. Speakers are asked to be specific about failure. A moderated discussion then takes up three unresolved issues – what counts as sufficient validation when metered data is inaccessible; how to communicate uncertainty to non-technical decision-makers without forfeiting their trust; and whether the field should converge on shared archetype and data standards or accept locally bespoke pipelines.
The session targets researchers, government agencies and practitioners. Outcomes will be consolidated into a short synthesis note circulated to participants and offered to the IBPSA community.

Workshop 3 · 18 November 2026, 09:30–11:30 · Seminar Room 5-6

Urban and Building Resilience for Heat and Haze

Chairs: Dayi Lai, Shanghai Jiao Tong University; Jiayu Li, National University of Singapore; Bowen Du, National University of Singapore

Speakers:

- Kun Lyu – Lecturer, Queensland University of Technology
- Federico Tartarini – Senior Lecturer, the University of Sydney
- Dayi Lai – Associate Professor, Shanghai Jiao Tong University
- Jiayu Li – Assistant Professor, National University of Singapore
- Bowen Du – Assistant Professor, National University of Singapore

About the workshop

Urban heat and haze increasingly affect the health, comfort, energy use, and everyday mobility of people in cities. These risks are especially acute for older adults, outdoor workers, and residents of dense neighbourhoods, where high temperatures, poor air quality, limited shade, and constrained ventilation can occur together. Addressing them requires stronger links between building design, urban form, environmental simulation, and public-health-oriented decision-making.
This workshop brings together researchers working across urban climate, building performance, thermal comfort, air quality, and resilient design. It will examine how simulation can support heat- and haze-resilient buildings and neighbourhoods, from evaluating indoor overheating and ventilation to assessing outdoor

exposure, shading, greenery, cooling strategies, and the interaction between energy demand and environmental quality.
By connecting methodological advances with real design and governance challenges, the session will identify research gaps and opportunities for collaboration. It is timely as cities seek climate adaptation measures that protect health without increasing energy burdens or shifting risks across populations.

Workshop 4 · 18 November 2026, 12:30–14:30 · Seminar Room 8

Bits4Watts Workshop 2026: 2nd International Workshop on Low-Carbon Building and Urban Energy Systems Powered by Data, AI, and Smart Controls

Chairs: Sicheng Zhan, The University of Hong Kong; Maomao Hu, National University of Singapore

Speakers:

- Yeonsook Heo – Professor, Korea University, South Korea
- Marco Savino Piscitelli – Assistant Professor, Polytechnic University of Turino, Italy
- Xuyuan Kang – Associate Professor, University of Chinese Academy of Sciences, China
- Xiaochen Yang – Associate Professor, Tianjin University, China
- Xiaochen Liu – Assistant Professor, Tsinghua University, China

About the workshop

Digitalization is becoming increasingly crucial in making today's buildings low-carbon and energy-efficient. According to the International Energy Agency, utilizing the data from ubiquitous sensors, actuators, and IoT devices could save around 10% of energy use in residential and commercial buildings by 2040. By leveraging data and data-driven techniques, various stakeholders can gain valuable insights and make better decision-making throughout all phases, from design through construction to operations.
This workshop aims to explore the integration of data, AI, and advanced controls in building energy management from individual buildings to the community scale. The workshop will feature selected presentations of case studies that highlight recent developments and demonstrations of data management, artificial intelligence, model-based diagnostic and control technologies, and grid interactions. The format will encourage an open discussion to address what is necessary to move from research to the widespread adoption of smart data-driven building technologies. By the end of the workshop, participants will have a deeper understanding of the current state of smart data-driven technologies in buildings and will be able to identify existing gaps that need to be addressed in future research and development.
For more information, visit the workshop website at https://bits4watts.org/2026/

Workshop 5 · 18 November 2026, 12:30–14:30 · Executive Room 1-2

Japan-Korea-Singapore Workshop on Membrane-Based Humidity Control for Sustainable HVAC Systems

Chairs: Gyuyoung Yoon, Nagoya City University; Jae-Weon Jeong, Hanyang University

Speakers:

- Kento Tsuji – Graduate Student, Nagoya City University
- Gyuyoung Yoon – Professor, Nagoya City University

- Hye-Jin Cho – Postdoctoral Researcher, Hanyang University
- Seong-Yong Cheon – Postdoctoral Researcher, Hanyang University

About the workshop

Indoor humidity control is a critical challenge for achieving both energy-efficient cooling and healthy indoor environments, particularly in climates and building applications where latent loads are significant. This Japan–Korea–Singapore workshop focuses on advanced membrane-based humidity control as a promising approach for separating latent and sensible heat treatment and improving the performance of next-generation HVAC systems.
The workshop brings together four complementary perspectives, ranging from membrane materials to practical system integration. First, recent progress in membrane-based dehumidification for energy-efficient cooling will be introduced, with emphasis on material development, vapor transport mechanisms, hybrid cooling configurations, and remaining challenges related to scalability, durability, and cost. Second, the feasibility of introducing membrane dehumidification mechanisms into existing HVAC systems will be examined through system configuration studies and simulation-based evaluation of indoor thermal environment and energy performance. Third, a membrane-vapor-pump-integrated liquid desiccant system will be discussed as a pressure-driven alternative to conventional thermally regenerated liquid desiccant systems, focusing on operating characteristics and energy efficiency. Finally, membrane-based humidity control will be considered from a broader building perspective, including dehumidification, humidification, indoor air quality, membrane selectivity, air crossover, and cyclic sweep gas operation.
Through these presentations, the workshop aims to clarify the current status, technical potential, and implementation challenges of membrane humidity control technologies for sustainable, energy-efficient, and healthy buildings.

Workshop 6 · 18 November 2026, 15:00–17:00 · Seminar Room 8

AI in Research and Education: Methodology and Responsibility

Chairs: Da Yan, Tsinghua University; Xuyuan Kang, University of Chinese Academy of Sciences

Speakers:

- Maomao Hu – Assistant Professor, National University of Singapore
- Alfonso Capozzoli – Professor, Politecnico di Torino
- Cheng Fan – Professor, Shenzhen University
- Cheol-Soo Park – Professor, Seoul National University
- Clayton Miller – Associate Professor, Singapore Management University
- Yohei Yamaguchi – Professor, University of Osaka

About the workshop

Artificial intelligence is rapidly entering research, engineering, and teaching, but its value depends less on model novelty and more on how well it is integrated with data, physical knowledge, engineering goals, and human responsibility. This 90-minute workshop will examine the general question: how can AI be made useful, reliable, and safe across research and education?
The 90-minute workshop will be organized around two big questions:
Research: How can AI advance the methodology of simulation research?
This question focuses on four aspects: (a) redesigning data acquisition, transmission, storage, and preprocessing to better support AI applications; (b) developing physics-informed AI that integrates physical knowledge with data-driven models to reach levels above pure AI models; (c) improving evaluation metrics and assessment methods so that AI models better align with engineering objectives; and (d) enhancing the

stability and efficiency of AI models for safe, robust, and low-cost deployment in engineering practice.
Education: How should AI be critically used in courses, graduate training, and research workflows?
This includes: Which stages of research can use AI, and which cannot? What changes should occur in classroom teaching and knowledge transfer in the AI era—is it still necessary to learn certain knowledge (e.g., coding) deeply? How can the ethical problems of AI be identified, defined, and avoided in research and education?
At the beginning of this session, invited speakers will first provide a short 5 minute (3~4 slides) individual perspectives. The chair will then facilitate discussion among the speakers about the two questions, encouraging them to respond to and challenge one another's assumptions. Questions and perspectives from the audience will be incorporated throughout rather than reserved only for the end. The workshop will conclude by asking each speaker to identify one research or practice priority for the community.

Technical tours · 18 November 2026

NUS Living Lab Tour: SDE4 Net-Zero Energy Building



SDE4

- Time: 15:00–17:00
- Meeting point: Executive Room 1-2 (SDE4-04-01)
- Tour lead: Adrian Chong, National University of Singapore

SDE4 is Singapore's first newly built net-zero energy building and a living laboratory for sustainable design. The tour showcases hybrid fan-assisted cooling, mixed-mode ventilation, daylighting, energy-efficient systems, and performance monitoring in a real-world educational setting.

NUS Living Lab Tour: Sustainability, Sensing, and the Smart Campus



NUS campus weather-station network

- Time: 15:00–17:00
- Meeting point: Open Space outside LT421 (SDE3, outside Design Lecture Theatre 421)
- Tour lead: Yu Qian Ang, National University of Singapore

Explore the NUS campus as a living laboratory for sustainable and data-driven built environments. The tour will visit selected campus weather stations and showcase how environmental sensing, urban microclimate monitoring and digital technologies are being used to understand and improve campus performance. Along the way, participants will also see examples of sustainable buildings and ongoing initiatives that connect building performance, mixed-mode-ventilation, outdoor thermal comfort and smart-campus research.

Platinum Sponsor Workshop

SPONSOR WORKSHOP

Building Performance Optimisation Challenge: Exploring Design Trade-offs Through Simulation

16 November 2026 · 10:45–11:45

Abstract: An interactive, hands-on workshop where participants make real building design and performance decisions, and see their impact on energy, carbon and occupant comfort through live building performance simulation in IESVE.

Gold Sponsor Presentation

SPONSOR PRESENTATION

Advanced Tools to Optimise Performance and Impact

16 November 2026 · 10:45–11:15

Abstract: Experience DesignBuilder's full workflow live, in under 30 minutes. Starting from nothing, we'll: build an EnergyPlus, Radiance daylighting, and CFD model, simulate, and review results, demonstrating the fastest mainstream workflow. We'll discuss best-practice performance modelling and compliance/certification, EnergyPlus Detailed HVAC, scripting and extensibility, multi-objective optimisation using genetic algorithms, and calibration against measured data. One model will be used to show concept design through to operational assessment without rebuilding between stages. Relevant to practitioners delivering projects under local and international compliance/certification schemes, and to researchers and students needing fast, flexible, and transparent simulation tools.

Industry Workshop

From Building Data to Building Intelligence: The GEAR by Kajima Living Lab Case Study

16 November 2026 · 10:45–11:45

Abstract: This workshop explores the role of industrial R&D in advancing building research, using an industrial R&D hub in Singapore as a real-world living lab. Through examples of human-centric workplace design, advanced cooling technologies for tropical climates, intelligent building operation, and co-creation with technology partners, we will share how research ideas can be tested and implemented in real buildings. The workshop will also discuss how industry and academia can complement each other in developing and validating the next generation of human-centric and low-carbon buildings.

Detailed Day 1 programme · 16 November 2026

Paper abstracts are available in the online programme on ConfTool (link and QR code on the Programme at a glance page).

07:30–08:30 Breakfast and Registration · Open Space outside LT421

08:30–08:45 Opening Address and Platinum Sponsor Addresses · Design Lecture Theatre 421

08:45–09:45 Opening Keynote - Mr. Tan Sze Tiong · Design Lecture Theatre 421
Chair: Khee Poh Lam

09:45–10:00 Morning Coffee Break · Open Space outside LT421

Invited Talks (parallel) · 10:00–10:30

Track	Invited speaker	Talk	Room
1	Shohei Miyata **Chair:** Adrian Chong	Concretization and Abstraction: Two Modelling Perspectives for Smart Buildings	Design Lecture Theatre 421
2	Xin Zhou **Chair:** Yohei Yamaguchi	Urban Residential Cooling Beyond Efficiency: Demand Heterogeneity, Sufficiency, and Flexibility	Design Lecture Theatre 422
3	Federico Tartarini **Chair:** Bowen Du	From sensation to strain: choosing the right thermal model	Design Lecture Theatre 423

10:30–10:45 Session Changeover

Parallel Session A · 10:45–12:15

Track 1 — DATA01 Data-Driven Modelling (Machine Learning, AI) 1 · Design Lecture Theatre 421

Chairs: Zhiang Zhang; Sicheng Zhan

Time	Type	Title	Presenter / speaker
10:45–11:15	**Sponsor**	Advanced Tools to Optimise Performance and Impact	DesignBuilder
11:15–11:30	Paper (Full)	Context-Guided Surface Temperature Field Reconstruction for Radiant Cooling Panels under Sparse Sensing	Yiting Zhang
11:30–11:40	Paper (Short)	Physics-Aware Spatiotemporal Downscaling of Urban Microclimates: Benchmarking Selective State Space Models against Recurrent Networks	Kerin Cardona
11:40–11:55	Paper (Full)	From Benchmarks to Buildings: Physics-Verified Causal Fine-Tuning for Building HVAC Control	Weilin Xin
11:55–12:10	Paper (Full)	Closing the Loop: An End-to-End Agentic Workflow for LLM-Driven Surrogate Model Generation and Interactive Building Design	Ralph Evins

Track 2 — SIM01 Building and Urban-Scale Performance Simulation 1 · Design Lecture Theatre 422

Chair: Steve Kardinal Jusuf

Time	Type	Title	Presenter / speaker
10:45–11:45	**Sponsor**	Building Performance Optimisation Challenge: Exploring Design Trade-offs Through Simulation	IES-VE
11:45–12:00	Paper (Full)	Impact of Model Detail and Calibration on Energy-Saving Estimates in Building Energy Simulation	Takeshi Okada
12:00–12:15	Paper (Full)	A Physics-Structured Surrogate Model for Hourly Solar Irradiance on Urban Building Surfaces	Hyungjoon Cho

Track 3 — IEQ01 Indoor Environmental Quality 1 · Design Lecture Theatre 423

Chairs: Jiayu Li; Zheng Kai

Time	Type	Title	Presenter / speaker
10:45–11:45	**Industry Workshop**	From Building Data to Building Intelligence: The GEAR by Kajima Living Lab Case Study	
11:45–12:00	Paper (Full)	Comparative Assessment of Group Comfort Model Resolution in HVAC Control Using High-Resolution Occupancy Tracking	Kazuki Horikoshi
12:00–12:15	Paper (Full)	Thermal Comfort in Transient Environments from Mixed-Mode Switching	Yue Lei

Track 4 — GRID01 Smart Grids and Energy Management Systems 1 · Seminar Room 8

Chairs: Makiko Ukai; Hongyuan Jia

Time	Type	Title	Presenter / speaker
10:45–11:00	Paper (Full)	Two-Stage Proximal Policy Optimization for Forecast-Uncertainty-Aware Energy and Task Scheduling in a PV-Integrated Technology Campus	Junlang Zhu
11:00–11:15	Paper (Full)	Mixed-Integer Model Predictive Control of Mixed-Mode Ventilation Systems in the Tropics	Wei Liang
11:15–11:30	Paper (Full)	Towards a Unified Methodology for Assessing Energy Flexibility in Building Envelopes	Ginevra Li Castri
11:30–11:45	Paper (Full)	Resident Acceptance of Bidirectional Charging in Existing Residential Communities for Smart Grid Integration	Po Han Chen
11:45–12:00	Paper (Full)	Exploring Deep Reinforcement Learning-Based Control Methods for Residential Distributed Energy Resources	Hibiki Oguro
12:00–12:15	Paper (Full)	A Classical-to-Quantum Workflow for Campus BESS Scheduling: Full-Year MILP Optimization, QAOA Diagnostics, and QPU Execution	Noheon Ki

Track 5 — CLIMATE01 Carbon Neutral Buildings and Climate Action 1 · Seminar Room 5-6

Chairs: Wei Wang; Dayi Lai

Time	Type	Title	Presenter / speaker
10:45–11:00	Paper (Full)	Cumulative Heat Exposure at Pedestrian Network Scale in a Realistic Urban Area Based on CFD Simulation Coupled with Radiation	Yibin Wang
11:00–11:15	Paper (Full)	Thermal Resilience Performance of Passive Cooling Strategies under Different Heatwave Types	Xue Liu
11:15–11:25	Paper (Short)	A Future Climate-Responsive UBEM Framework for Building Energy Resilience under Compound Extreme Heatwaves and UHI Effects: A Case Study of Singapore	Shuyang Zhang
11:25–11:35	Paper (Short)	Effects of Built-Form Composition and Greenspace on Street-Level Urban Heat Island Intensity at Comparable Urban Volume Density	Tageui Hong
11:35–11:45	Paper (Short)	Climate Resilience of Water-Side Economizer Energy Savings in South Korea under Future Climate Scenarios	Hansol Shin
11:45–11:55	Paper (Short)	A Modular CityGML 3.0 Extension for Urban Life Cycle Assessment	Alexander Hollberg
11:55–12:05	Paper (Short)	From Correlation to Explanation: XAI-Based Interpretation of Building Performance Design Spaces	Junyi Li
12:05–12:15	Paper (Short)	Beyond Static Heat Exposure: Connecting Cross-Scale Simulation and Heat-Risk Indicators	Kun Lyu

Track 6 — ENERGY01 Energy Efficiency and Retrofitting 1 · Seminar Room 3-4

Chairs: Gyuyoung Yoon; Xuyuan Kang

Time	Type	Title	Presenter / speaker
10:45–11:00	Paper (Full)	Development of an LLM-Integrated Energy-Efficient Design Support Tool Using a Large-Scale Building Specification Dataset	Masato Miyata
11:00–11:15	Paper (Full)	Weather Data Selection as a Determinant of Retrofit Risk Assessment: Target-Based Probabilistic Approach	Hyung-Jin Mun
11:15–11:30	Paper (Full)	Assessing Sequential Decomposition for Co-Design of Building Integrated Energy Systems	Riccardo Talami
11:30–11:45	Paper (Full)	Seasonal Climate-Responsive Passive Retrofit of Open-Plan Offices: A Human-Centric Multi-Objective Optimization and Decision-Making Framework	Senhong Cai
11:45–11:55	Paper (Short)	Inverse Multi-Objective Design for Customizing Thermochromic Smart Windows in Air-Conditioned Environments	Wenxin Li
11:55–12:05	Paper (Short)	Enhancing Campus Energy Performance through Data-Driven Retrofits: Insights from Building A01, CEPT University	Akarshna A K
12:05–12:15	Paper (Short)	An Integrated Liquid Desiccant–Heat Pump System with PCM Storage for Grid-Interactive Efficient Buildings: A Simulation Study	Meriem Adnouni

12:15–13:15 Poster Session & Lunch Break · Open Space outside LT421

Parallel Session B · 13:15–14:45

Track 1 — DATA02 Data-Driven Modelling (Machine Learning, AI) 2 · Design Lecture Theatre 421

Chairs: Shohei Miyata; Ralph Evins

Time	Type	Title	Presenter / speaker
13:15–13:30	Paper (Full)	Learning Shared and Domain-Specific Representations for Chiller Modeling	Jae-Hyeog Kim
13:30–13:45	Paper (Full)	Multi-Agent Reinforcement Learning Approach for Large Chiller Plant Controls	Xiao Wang
13:45–14:00	Paper (Full)	Physics-Informed Bayesian Modeling for MPC-Based Chiller Sequencing in Large-Scale Public Buildings	Shuhao Li
14:00–14:10	Paper (Short)	Dynamic Preference-Aware Multi-Objective Reinforcement Learning for HVAC Control in Modular Buildings	Anh Tuan Nguyen
14:10–14:20	Paper (Short)	A Study on Energy Consumption Prediction for Multi-Zone VAV Systems in Office Buildings Using Spatio-Temporal Graph Neural Networks	Xin Yang
14:20–14:30	Paper (Short)	Hierarchical Thermal Modeling for Grid-Interactive Buildings: Decoupling VRF Operational Heterogeneity and Latent Gains under Data-Missing	Jiahui Li
14:30–14:40	Paper (Short)	Simplified Calibration of Multi-Zone Building Thermal Models Using Transformer Autoencoders and Ensemble Conformal Artificial Neural Networks	Junxi Gao

Track 2 — SIM04 Building and Urban-Scale Performance Simulation 4 · Design Lecture Theatre 422

Chairs: Yu Qian Ang; Xue Liu

Time	Type	Title	Presenter / speaker
13:15–13:30	Paper (Full)	Analyzing Heat Pump Design for Performance in a 5GDHC Network in Southern Sweden Using Carnot Sub-Efficiencies	Akram Abdul Hamid
13:30–13:40	Paper (Short)	SweBEM — A Tool for Predicting Heating and Cooling Loads in the Swedish Building Stock: A Building Typology-Based Approach	Jitendra Pavan Jakkula
13:40–13:55	Paper (Full)	Performance Evaluation of a Ground Source Heat Pump System under Variable Flow Control for High-Rise Residential Buildings	Minyoung Choi
13:55–14:05	Paper (Short)	Simulation-Based Analysis of Geometric Variables Affecting Heating and Cooling Loads in Non-Convex Office Plan Forms	Juhee Nam
14:05–14:15	Paper (Short)	Study on Design and Operation of a Heat Pump System Using a Rainwater Tank as Heat Source and Sink	Takasuke Ide
14:15–14:25	Paper (Short)	Evaluation of Simplified Zoning Methods for Residential Buildings in Urban Building Energy Modeling	Jingjing Yang

Time	Type	Title	Presenter / speaker
14:25–14:35	Paper (Short)	Thermal Zoning Resolution for Indoor Overheating in Urban Building Energy Modelling	Richard Dean Morales
14:35–14:45	Paper (Short)	Energy Performance Evaluation of an Office Building with a Desiccant Air-Conditioning System Including a Total Heat Exchanger	Kiryu Kondo

Track 3 — SIM03 Building and Urban-Scale Performance Simulation 3 · Design Lecture Theatre 423

Chairs: Hee Joo Poh; Wenxuan Zhao

Time	Type	Title	Presenter / speaker
13:15–13:30	Paper (Full)	An Automated Thermal Zone Simplification Method for BIM-to-BEM Conversion Using Hierarchical Clustering	Yeeun Kim
13:30–13:45	Paper (Full)	Mapping Unit Floor Plans to Building Footprints for Zone-Level Building Energy Modeling	Cherry Kim
13:45–14:00	Paper (Full)	CFD-Driven Reduced-Order Modelling and Optimal Dispatch of Modular PCM Cold Storage Systems in Commercial Buildings	Zhuoqun Xing
14:00–14:15	Paper (Full)	A UAV-Assisted Digital Twin Optimization Method for Energy Replanning in Existing Urban Areas	Yan Ding
14:15–14:25	Paper (Short)	Orientation-Specific Optimisation Strategy of Daylighting, Thermal Comfort, and Envelope Heat Gain in Urban Kampung Housing	Vine Novia Pakpahan
14:25–14:35	Paper (Short)	Semantic Representation of Advanced Building Envelopes for Interoperable Building Information Workflows	Aseel Raad
14:35–14:45	Paper (Short)	Net-Zero Mixed Mode EPI Targets and Building-Scale Limits for Indian Offices	Suyashi Srivastava

Track 4 — SIM02 Building and Urban-Scale Performance Simulation 2 · Seminar Room 8

Chairs: Keiichiro Taniguchi; Wei Liang

Time	Type	Title	Presenter / speaker
13:15–13:30	Paper (Full)	Enhancing Bottom-Up Urban Building Energy Modeling Performance through a Top-Down Constrained Building Archetype Assignment	Yueran Wang
13:30–13:45	Paper (Full)	UBEE: A Surrogate Model-Based Urban Building Energy Modeling Platform with Large Language Model-Based Report Generation	Jeongyun Hwang
13:45–13:55	Paper (Short)	Fisheye Image Conditions for Equivalent Albedo Approximation in Urban Facade Irradiance Simulation	Daemin Yoon
13:55–14:05	Paper (Short)	A Schema-Driven Approach for Automated and Scalable Urban Building Energy Modeling	Xinyu Wang
14:05–14:15	Paper (Short)	Potential of Multiple Ordinaries for Urban Retrofit Simulation	Hyeong-Gon Jo
14:15–14:25	Paper (Short)	An Automated Workflow for Urban-Scale 3D Modeling and Simulation Integrating Multi-Source Geospatial Data	Zifan Zeng

Time	Type	Title	Presenter / speaker
14:25–14:35	Paper (Short)	Decarbonization and Thermal Resilience in Community Retrofit Planning: A Multi-Objective Urban Building Energy Modeling Framework	Xiaoyue Yan
14:35–14:45	Paper (Short)	City2BEM: Cross-Scale Mapping and Automated Generation from Urban to Single-Building Energy Models	Mingxuan Guo

Track 5 — CLIMATE02 Carbon Neutral Buildings and Climate Action 2 · Seminar Room 5-6

Chairs: Xilei Dai; Wenxin Li

Time	Type	Title	Presenter / speaker
13:15–13:25	Paper (Short)	Thermal Resilience of Residential Buildings under Power Outage in Cold Climate: A Block-Level Simulation Study	Genku Kayo
13:25–13:40	Paper (Full)	Assessing the Availability of Data and Modeling Techniques for Building Stock Models in Japanese Municipal Decarbonization Planning	Yohei Yamaguchi
13:40–13:50	Paper (Short)	Groundwater Recharge Simulation for Climate Adaptation in Ukiha City, Japan: Evaluating Forest, Farmland, and Residential Land Management Scenarios in the Chikugo River Basin	Chika Takatori
13:50–14:00	Paper (Short)	Data Center Waste Heat as a Building Carbon-Neutral Strategy: Techno-Economic and Policy Assessment of District Energy Systems	Daniela Carrasco
14:00–14:10	Paper (Short)	Thermal Performance of Composite Wall Assemblies for Low and Mid-Rise Residences	Vaishnavi SJ
14:10–14:20	Paper (Short)	Numerical Assessment of Summer Interstitial Condensation Risk in Japanese Timber Wall Assemblies under Climate Change	Yusuke Arima
14:20–14:30	Paper (Short)	Climate-Adaptive Design Strategies for Residential Buildings in the Valley Plain Area of Lhasa	Wenjing Sun

Track 6 — DATA03 Data-Driven Modelling (Machine Learning, AI) 3 · Seminar Room 3-4

Chairs: Jung Min Han; Marco Savino Piscitelli

Time	Type	Title	Presenter / speaker
13:15–13:25	Paper (Short)	RGB-Thermal Delamination Segmentation of Exterior Wall with Cross-Modal Object Detection and Unsupervised Segment Anything Model	Yike Hu
13:25–13:40	Paper (Full)	A Machine Learning-Based Surrogate Model for Predicting Glare-Related Physical Variables from Curtain Wall Facades	Jisoo Lee
13:40–13:55	Paper (Full)	Mechanism-Guided and Safety-Constrained Reinforcement Learning for Energy-Efficient Control of Direct-Expansion CRAC Units in Data Centres	Shengpeng Chen
13:55–14:05	Paper (Short)	Effects of Urban Microclimate Spatial Resolution on Building Cooling Energy Modeling Accuracy	Xiaohan Shen

Time	Type	Title	Presenter / speaker
14:05–14:15	Paper (Short)	Data-Driven Analysis of Airtightness in Apartment Housing Units via Unsupervised Clustering	So-Yi Park
14:15–14:25	Paper (Short)	Importance of Data Resolution When Estimating Nighttime Overheating with Random Forests: A Large-Scale Study Using Monitored Indoor Temperature Data	Mats Persson
14:25–14:35	Paper (Short)	An Electrical Current–Thermal Data Fusion Method for Compressor Fault Diagnosis in Variable Refrigerant Flow (VRF) Systems Using Field Measurements	Enqi Shen
14:35–14:45	Paper (Short)	Crowdsourcing Retrofit Information: Leveraging Real Estate Listings across the German Building Stock	Maxim Shamovich

14:45–15:00 Session Changeover

Parallel Session C · 15:00–16:30

Track 1 — DATA05 Data-Driven Modelling (Machine Learning, AI) 5 · Design Lecture Theatre 421

Chairs: Jingjing An; Wonjun Choi

Time	Type	Title	Presenter / speaker
15:00–15:15	Paper (Full)	Toward Autonomous Optimization of Building Energy Simulation: A Natural Language–Driven Multi-Agent Framework for Decision Optimization and Validation	Zhexuan Yu
15:15–15:30	Paper (Full)	Towards Agentic AI for Automated Building Energy Modeling, Calibration, and Optimization	Pandarasamy Arjunan
15:30–15:45	Paper (Full)	Street-Level Visual Evidence for LLM-Based Multimodal Reasoning in Early-Stage Sustainable Building Design	Yuxuan Li
15:45–16:00	Paper (Full)	Design of a Behavior-Aware Intelligent Interactive Facade System for Healthcare and Elderly Care Applications	Jiaqi Niu
16:00–16:10	Paper (Short)	Multi-Agent Framework for Qualitative Analysis of Design Artifacts in an Energy Simulation Course	Jayedi Aman
16:10–16:20	Paper (Short)	Comparing Surrogate Models for Urban Building Energy Modeling – Robustness and Deployment Risk	Pengdi LYu

Track 2 — SIM06 Building and Urban-Scale Performance Simulation 6 · Design Lecture Theatre 422

Chairs: Yan Ding; Jingjing Yang

Time	Type	Title	Presenter / speaker
15:00–15:10	Paper (Short)	Impact of Computational Domain on the Simulation of Buoyancy-Driven Displacement Natural Ventilation	Yeyu Xiang
15:10–15:25	Paper (Full)	NUScape: A Tangible-Digital Interface Linking Building Performance Simulations to Participatory Sustainability Engagement	Yudian Chen

Time	Type	Title	Presenter / speaker
15:25–15:40	Paper (Full)	Sketch2Climate: A Multi-Modal Fusion Approach for Sketch-Driven Building Performance Machine Learning Surrogates	Xinrui Zhang
15:40–15:55	Paper (Full)	An Approach for the Optimised Design of Energy Efficiency and Comfort in Residential Blocks Based on a Comparison of Machine Learning-Based Prediction Models	Siyao Wang
15:55–16:10	Paper (Full)	Evaluation of CFD Predictions of Indoor Airflow Induced by Multiple Ceiling Fans	Fangyu Liu
16:10–16:20	Paper (Short)	Development and Validation of a Modelica-Based Virtual Testbed for Mixed-Mode Ventilation Systems	Shanrui Shi
16:20–16:30	Paper (Short)	The Interplay between Building Orientation and Natural Ventilation Performance: A Multi-City CFD Investigation for Climate-Responsive Design	Xiujiao Song

Track 3 — SIM05 Building and Urban-Scale Performance Simulation 5 · Design Lecture Theatre 423

Chairs: Dorit Aviv; Sicheng Zhan

Time	Type	Title	Presenter / speaker
15:00–15:15	Paper (Full)	Coupled CFD–Hygrothermal Simulation of Subfloor Condensation and Regional Risk Assessment in Residential Buildings	Xianzhe Yang
15:15–15:30	Paper (Full)	A Multimodal IoT Window Using an AI Image Sensor : Detection Accuracy and Preliminary EnergyPlus Evaluation	Chieko Ogihara
15:30–15:40	Paper (Short)	Understanding the Role of Tree Canopy Cover in Residential Energy Consumption: A Case Study of Sector 22, Chandigarh	Vimal Preet
15:40–15:50	Paper (Short)	Second-Scale Dynamic Modeling of an Air Handling Unit for Start-Up Control Stabilization	Hiroki Ikeda
15:50–16:00	Paper (Short)	Towards a City-Scale Building Physics Dataset for Singapore Public Housing	Mikhyle Mat Nooh
16:00–16:10	Paper (Short)	Simulation-Based Evaluation of the Thermal Performance of a Traditional Courtyard House in the Medina of Tunis under Naturally Ventilated Conditions	Amira EL Kchaou
16:10–16:20	Paper (Short)	Integrated Digital–Physical Modeling of Thermal Shelters for Reducing Freeze–Thaw Cycles in Fossil Remains	Hanzhong Luo
16:20–16:30	Paper (Short)	Evaluation of Performance-Based Firefighting Design for Smoke Control Effectiveness in High-Rise Fires Considering Stack Effect Impacts	Yongjun Choi

Track 4 — IEQ02 Indoor Environmental Quality 2 · Seminar Room 8

Chairs: Federico Tartarini; Sishi Li

Time	Type	Title	Presenter / speaker
15:00–15:15	Paper (Full)	Evaluating and Extending Window-View Quality Criteria through Human Satisfaction and Machine Learning: Identifying Perceptually Relevant Semantic and Geometric Features	Chengxuan Li
15:15–15:30	Paper (Full)	Eye-Level Vertical Illuminance as an Indicator for Integrated Assessment of Glare and Circadian Lighting in Sidelit Open-Plan Offices	Yeongjun Kang
15:30–15:45	Paper (Full)	Orientation-Specific Window Design for Humid-Subtropical Single-Family Housing: A Hybrid Simulation-Surrogate Framework	Maryam Aman
15:45–16:00	Paper (Full)	Balancing Visual Comfort, Daylight Availability and Non-Visual Impacts in Tropical Classrooms: A Case Study of an Architectural Studio in Bangkok, Thailand	Natthakorn Laohawanich
16:00–16:15	Paper (Full)	Daylight Efficacy in Existing Building Prototypes of Varanasi for Improved Design Strategies	Kiran Kumari Yadav
16:15–16:30	Paper (Full)	A Methodological Workflow to Perform Annual Integrative Lighting Simulations	Alberto Gremo

Track 5 — DATA04 Data-Driven Modelling (Machine Learning, AI) 4 · Seminar Room 5-6

Chairs: Alfonso Capozzoli; Xuyuan Kang

Time	Type	Title	Presenter / speaker
15:00–15:15	Paper (Full)	Replus: Fast, Schema-Grounded Editing of EnergyPlus IDF Models with Large Language Models	Hongyuan Jia
15:15–15:30	Paper (Full)	Real IBM-QPU Trainable Parameterized Quantum Circuits with a Mixture-of-Regressors Head for Multi-Target Building Energy Forecasting	Jung Min Han
15:30–15:40	Paper (Short)	Candidate Parameter Sets from Uniform and Uncertainty-Guided Adaptive Exploration in Building Energy Model	Jae-Hyeog Kim
15:40–15:55	Paper (Full)	Causal-Inspired Domain Invariant Learning for HVAC System Model	Sunghyun Kim
15:55–16:10	Paper (Full)	Minimal-Image DUSt3R for Campus-Scale Architectural Reconstruction: Optimizing Facade and Aerial Views for the Yonsei Digital Twin	Hamza Zia
16:10–16:20	Paper (Short)	Incremental Value of RGB-Derived Behavioral Features for Thermal Preference Prediction in Unseen Participants	So Kanazawa
16:20–16:30	Paper (Short)	Variable-Length Intraday Forecasting of Emergency Department Arrivals Using Multimodal Deep Learning	Zhen Han

Track 6 — ENERGY02 Energy Efficiency and Retrofitting 2 · Seminar Room 3-4

Chairs: Maomao Hu; Mingyang Qian

Time	Type	Title	Presenter / speaker
15:00–15:10	Paper (Short)	Surrogate Modeling and SHAP-Based Analysis of Operational and Behavioral Scenarios for Post-Retrofit Energy Performance	Naekyung Kim
15:10–15:20	Paper (Short)	Impact of DC Power Distribution on Energy Efficiency in Residential PV Systems with Battery Storage	Nono Takeuchi
15:20–15:30	Paper (Short)	Optimizing Thermal Comfort in Singapore Classrooms Using Integrated CFD and Field Measurements of Plug Fan Configurations	Xin Zhu Wang
15:30–15:40	Paper (Short)	Transforming Old Building Stock to Net-Positive Energy Buildings through Integrated Solar PV and Smart Energy Management	Prabhat Sharma
15:40–15:50	Paper (Short)	Simulation-Based Multi-Criteria Retrofit Selection under Priority Profiles for High-Rise Office Buildings in Jakarta	Feodora Clarissa Tampubolon
15:50–16:00	Paper (Short)	Rethinking HVAC Energy Performance Evaluation in Underground Metro Stations: An In-Situ Study of Operational Conditions and System-Level Efficiency	Yuxuan Ji
16:00–16:10	Paper (Short)	Scaling Building Energy Retrofits in the UAE: Stakeholder Barriers, Enablers and Policy Framework	Young Ki Kim

16:30–16:45 Afternoon Coffee Break · Open Space outside LT421

Parallel Session D · 16:45–18:15

Track 1 — DATA07 Data-Driven Modelling (Machine Learning, AI) 7 · Design Lecture Theatre 421

Chairs: Yu Qian Ang; Cong Yu

Time	Type	Title	Presenter / speaker
16:45–17:00	Paper (Full)	Predictability of Cooling-Load Data Underlying Prediction Accuracy and Uncertainty	Heeyoon Kim
17:00–17:10	Paper (Short)	Wi-Fi CSI-Based Occupancy-Informed Dynamic Ventilation Control for Low-Occupancy Classrooms	Wanjie Yu
17:10–17:20	Paper (Short)	IoT-Enabled Adaptive Biophilic Operations for Net-Zero Energy Office Buildings in Subtropical Climates	Umaru Mohammed Bongwirnso
17:20–17:30	Paper (Short)	Comparative Analysis of Time-Series and Tree-Based Machine Learning Models for Energy Prediction in Indoor Aquaculture Facilities	Jangho Hong
17:30–17:40	Paper (Short)	A Co-Simulation-Based Deep Reinforcement Learning Method for Coordinated Chiller Staging and Supply Water Temperature Control	Haihui He
17:40–17:50	Paper (Short)	Detecting Occupancy Patterns and Operational Drift in Buildings Using Sparse CO_2 and Temperature Sensing with Ensemble Machine Learning	Vignesh Pechiappan Ayyathurai

Time	Type	Title	Presenter / speaker
17:50–18:00	Paper (Short)	Toward Operational Digital Twins: Grey-Box Thermal Modeling and Rule-Based Cooling Load Prediction from Measured Data	Kornkamon Tantiwanit
18:00–18:10	Paper (Short)	From Historical Deployment to Future Planning: A County-Level Spatiotemporal Model for Provincial PV Expansion in Hebei, China	Tianyi Chen

Track 2 — SIM08 Building and Urban-Scale Performance Simulation 8 · Design Lecture Theatre 422

Chairs: Genku Kayo; Hee Joo Poh

Time	Type	Title	Presenter / speaker
16:45–17:00	Paper (Full)	Quantifying the Co-Benefits of Building Decarbonization: A Comparative Study of Singapore and Hong Kong	Ye Xia
17:00–17:10	Paper (Short)	Annual Net Energy Performance of Semi-Transparent CdTe Photovoltaic Glazing in Hot-Summer and Cold-Winter Climates: A Comparative Simulation of a Typical Office Module	Huizhen Li
17:10–17:20	Paper (Short)	Influence of Planar Compactness and Spatial Symmetry Parameters on the Dynamic Dispersion of Atmospheric Pollutants in Urban Blocks	Dianhan Zhu
17:20–17:30	Paper (Short)	Evaluating Simulation Tools for Blue-Green Infrastructure Planning in Singapore: A Systematic Framework for Multi-Criteria Decision-Making	Yin Mei Fong
17:30–17:40	Paper (Short)	Dominant Drivers of Envelope Heat Flux in a Conditioned Underground Building: A Decomposition-Based Analysis	Sanjaya Sena
17:40–17:50	Paper (Short)	Integrated Generative Design for Building Performance: Applied to Building Configuration under Urban Planning Constraints	Trong-Tin Tran
17:50–18:00	Paper (Short)	Wind Tunnel Assessment on Wind Turbulent Flow around a Semi-Open Structure	Yujie Chu
18:00–18:15	Paper (Full)	Study on Energy Consumption and Generation in District Energy Supply Planning for the Kanayama District	Kosuke Iida

Track 3 — SIM07 Building and Urban-Scale Performance Simulation 7 · Design Lecture Theatre 423

Chair: Jung Min Han

Time	Type	Title	Presenter / speaker
16:45–17:00	Paper (Full)	A Framework for a Microclimate Digital Twin for Urban Outdoor Comfort	Remy Mermelstein
17:00–17:15	Paper (Full)	Bridging the Energy Demand Gap to Decent Living Standards: A High-Resolution Household Energy Analysis in Africa Using TREES Model	Yuta Sawada
17:15–17:30	Paper (Full)	A Study of Dynamic Thermal Comfort in Walking Routes with Respect to Shading Distribution and Continuous Sun Exposure	Tong Kwan-Tai

Time	Type	Title	Presenter / speaker
17:30–17:40	Paper (Short)	Thermal Alliesthesia as a Design Tool for Enhancing Pleasure in Warm, Transient Outdoor Environments	Vishal Yadav
17:40–17:50	Paper (Short)	Comparative Study of Urban Wind Performance Using ENVI-met and UrbanMicroclimateFoam	Aureley Pradipta
17:50–18:00	Paper (Short)	Time-Step Effects on Pareto-Based Setback-Preheating Optimization in a District-Heated Apartment	Liyuan Yin

Track 4 — IEQ03 Indoor Environmental Quality 3 · Seminar Room 8

Chairs: Bowen Du; Kun Lyu

Time	Type	Title	Presenter / speaker
16:45–17:00	Paper (Full)	Relationships between Floor Impact Sound Reduction Performance and Heating Energy Consumption of Radiant Heating Floors in Apartment Buildings	Rosa Seo
17:00–17:15	Paper (Full)	Estimation of Total Airborne Bacteria in Outpatient Waiting Room Based on Indoor Air Quality Data Using Generative AI	Jehyun Kim
17:15–17:25	Paper (Short)	Experimental Validation and Simulation-Based Evaluation of Solar Shading Performance Using Small-Diameter Hardwood Slats	Haruto Aoki
17:25–17:35	Paper (Short)	Simulation-Based Evaluation of Visitors' Transient Thermal Sensation After Different Pre-Entry Activities in a Japanese City Hall	Yuki Hamana
17:35–17:45	Paper (Short)	Systematic Quantification of Occupant Visual Field Errors in Image-Based Daylight Simulation	Daemin Yoon
17:45–17:55	Paper (Short)	Dynamic Indoor Temperature Response of Modular Steel and Concrete Insulated Wall Systems under Winter Heating Conditions	Alisher Iskhak
17:55–18:05	Paper (Short)	Do Daylight and Circadian Lighting Assessments Lead to Similar Envelope Recommendations? A Case of Spectrally Selective High-Performance Glazing	Rishiraj Ghosh
18:05–18:15	Paper (Short)	Spatial Analysis of Energy Poverty and Thermal Vulnerability: A Township-Level Study in Subtropical Taiwan	I-Ching Huang

Track 5 — DATA06 Data-Driven Modelling (Machine Learning, AI) 6 · Seminar Room 5-6

Chairs: Marco Savino Piscitelli; Wei Liang

Time	Type	Title	Presenter / speaker
16:45–17:00	Paper (Full)	Causality for AI-Based MPC: A Ladder of Causation Perspective	Jin-Hong Kim
17:00–17:10	Paper (Short)	Hybrid Physics-Guided Residual Learning Framework for Integrated PV-Load Forecasting and Battery Dispatch in Commercial Buildings	Hongyuan Jia
17:10–17:20	Paper (Short)	Probabilistic Load Forecasting and Chance-Constrained MPC for Multi-Quality Cooling Plants: A Case Study of Ice Storage–Cooling Tower–PV–Battery Systems	Zhe Tian

Time	Type	Title	Presenter / speaker
17:20–17:30	Paper (Short)	Generalisable Reinforcement Learning for Mixed-Mode Ventilation Control via Domain Randomisation	Roman Buckle
17:30–17:40	Paper (Short)	A Hybrid Physics-Data Modeling Framework for Rotary Desiccant Wheels: Integrating Multi-Physics Simulation with Genetic Algorithm Calibration	Zhexuan Chen
17:40–17:50	Paper (Short)	Scenario-Dependent Data Mining of a Deep Dehumidification System in an Industrial Building: Identifying Energy Performance Drivers from High-Volume Operational Data	Yihang Ye
17:50–18:00	Paper (Short)	Building Thermal Modeling from Operational Data Using Deep Learning and Grey-Box Models	Sharath Ram Kumar
18:00–18:15	Paper (Full)	Interpretable Urban Residential Load Forecasting: An XGBoost-SHAP Framework with Multi-City Heterogeneity Analysis	Danya Feng

Track 6 — ENERGY03 Energy Efficiency and Retrofitting 3 · Seminar Room 3-4

Chairs: Wenxin Li; Yutong Tan

Time	Type	Title	Presenter / speaker
16:45–17:00	Paper (Full)	An Event-Based Occupancy-Driven HVAC Control Framework for Institutional Buildings	Muhammad Zeeshan Siddique
17:00–17:15	Paper (Full)	Feasibility Study of HILS Based on a Detailed Dynamic Model for Control Tuning of an Air Distribution System	Tatsu Kishida
17:15–17:25	Paper (Short)	Segmental Heat-Loss Quantification for Optimal Personalized Environmental Control System (PECS) Sizing	Stuti Banerjee
17:25–17:35	Paper (Short)	Quantitative Evaluation of Energy Savings Effect in AI-Controlled HVAC Using BEMS Data	Gyuyoung Yoon
17:35–17:45	Paper (Short)	Adaptive Operation and Long-Term Performance Evaluation of a River Water–Source District Heating and Cooling System	Hisataka Kitora
17:45–17:55	Paper (Short)	Life-Cycle Cost Optimization of Ground Source Heat Pump and District Heating Systems in a Nordic Detached House	Xiaolei Yuan
17:55–18:05	Paper (Short)	A Hybrid Approach for Predicting Cooling-Season Air-Conditioning Electricity Consumption in Existing Offices	Chuxin Zhang
18:05–18:15	Paper (Short)	From Rule-of-Thumb to Simulation-Informed Design: Reducing HVAC Oversizing in a Library Building by 76%	Arjita Gupta

18:15–19:15 Welcome Reception · SDE4 Open Plaza

Detailed Day 2 programme · 17 November 2026

Paper abstracts are available in the online programme on ConfTool (link and QR code on the Programme at a glance page).

08:30–09:30 Keynote Address 2 - Prof. Cheol-Soo Park · Design Lecture Theatre 421
Chair: Da Yan

09:30–09:45 Morning Coffee Break · Open Space outside LT421

Invited Talks (parallel) · 09:45–10:15

Track	Invited speaker	Talk	Room
1	Filip Biljecki **Chair:** Clayton Miller	Building Open-Source Tools for Sustainable Urban Informatics	Design Lecture Theatre 421
2	Dorit Aviv **Chair:** Holly Samuelson	Designing Thermal Resilience	Design Lecture Theatre 422
3	Marco Savino Piscitelli, PhD **Chair:** Maomao Hu	Advancing energy management in buildings by coupling semantic technologies and AI	Design Lecture Theatre 423
4	Jungmin Han **Chair:** Yu Qian Ang	When Simulation Becomes a Design Partner: Physics, AI, and Quantum Models Across Scales	Seminar Room 8

10:15–10:30 Session Changeover

Parallel Session E · 10:30–12:15

Track 1 — DATA+SIM08 Data-Driven Modelling (Machine Learning, AI) and Building and Urban-Scale Performance Simulation 8 · Design Lecture Theatre 421

Chairs: Rongpeng Zhang; Xiao Wang

Time	Type	Title	Presenter / speaker
10:30–10:45	Paper (Full)	Revealing the Thermal Bridging and Performance Gap in Modular Buildings with a Hybrid Predictive Framework for Operational Carbon Emissions	Jiang Chen
10:45–10:55	Paper (Short)	OpenUBEM: Semantically Enriched 3D Model Generation from Open-Source Data for UBEM in Data-Sparse Regions	Jonathan Koh
10:55–11:10	Paper (Full)	Energy Benchmarking of Public Libraries with Credible Intervals Using Gaussian Process Quantile Regression	Hyungbin Joo
11:10–11:25	Paper (Full)	Towards Spatially Competent AI for Building Energy Modeling: An Evaluation Framework, Model Assessment, and Enhancement Directions	Xueyu Chen
11:25–11:35	Paper (Short)	Automated Integration of PLATEAU CityGML Data into Building Energy Simulation for Urban Radiation Environment Assessment	Kazuki Nakaike

Time	Type	Title	Presenter / speaker
11:35–11:45	Paper (Short)	Effects of Occupant Behavior and Comfort-Related Operational Preferences on Office Building Energy Performance: A Simulation-Based Study	Aliyah Shafira
11:45–11:55	Paper (Short)	Development of a Regional-Scale Net Electricity Demand Estimation Method Considering Daytime Heat Pump Water Heater and Lithium-Ion Battery: Case Study in Aichi Prefecture, Japan	Shohei Yasuda
11:55–12:05	Paper (Short)	Stochastic Appliance-Use Modeling for Assessing Rural Residential Energy Flexibility: A Case Study in Jiangsu, China	Yi Guo Wang

Track 2 — SIM09 Building and Urban-Scale Performance Simulation 9 · Design Lecture Theatre 422

Chairs: Makiko Ukai; Jingjing An

Time	Type	Title	Presenter / speaker
10:30–10:45	Paper (Full)	Urban Building Energy Modeling Validation in a Dense District through Enhanced Data Acquisition and Model Calibration	Thidathip Kounnavong
10:45–11:00	Paper (Full)	Coupled CFD and Snow Layer–Cooling Pipe System Modeling for Indoor Artificial Ski Resorts	Zhonghua Peng
11:00–11:15	Paper (Full)	Parametric Design of Heat Pumps for a Swedish 5GDHC System: Component Sizing and Frequency Optimization Using Cycle Modeling	Erik Everbring
11:15–11:30	Paper (Full)	Integrated UBEM–MILP Workflow for PED Transition in an Existing Vienna District	Jan-Philipp Richtmann
11:30–11:40	Paper (Short)	Hybrid Archetype–Residual UBEM for Stock-Scale Energy Diagnosis of Aging Apartment Buildings	Ji Hun Park
11:40–11:50	Paper (Short)	ShadingZip: Within-Building Selective Computation of Shading Profiles for Urban Building Energy Models	Chengxuan Li
11:50–12:00	Paper (Short)	Impact of Building Porosity on Street Canyon Airflow and Pedestrian Comfort: A Wind Tunnel and CFD Study	Subin Lin
12:00–12:15	Paper (Full)	Unlocking Complex Geometry for Building Energy Modeling Using Radiance Direct and Diffuse Shading Overrides in EnergyPlus	Chengxuan Li

Track 3 — GRID02 Smart Grids and Energy Management Systems 2 · Design Lecture Theatre 423

Chairs: Wei Wang; Wei Liang

Time	Type	Title	Presenter / speaker
10:30–10:45	Paper (Full)	Evaluation of Block-Scale Electricity Supply-Demand Balance Using 3D Simulation	Sota Sumi
10:45–10:55	Paper (Short)	Assessing the Impact of Extreme Heatwaves and Urban-Rural Climate Disparities on Building Cooling Energy Demand of Public Rental Housing in Hong Kong	Guanli Feng

Time	Type	Title	Presenter / speaker
10:55–11:05	Paper (Short)	Optimal Sizing of PV and Battery Energy Storage Systems for Building Energy Resilience	Qinhuan Liu
11:05–11:15	Paper (Short)	Co-Simulation of Vehicle-to-Building (V2B) and Thermal Loads: A Scalable Testbed for Integrated Demand Response in Commercial Facilities	Raditya Chema Hafizh Pradigta
11:15–11:25	Paper (Short)	Bi-Level Resilient Planning and Multi-Market Bidding of Carbon Anode Industrial Parks: Exploiting Thermodynamic Inertia via Wasserstein-Distributionally Robust Optimization	Huizhen Wan
11:25–11:35	Paper (Short)	Feasibility Study of Using Electric Vehicles as Energy Storage for Buildings	Takuya Tanaka
11:35–11:45	Paper (Short)	Degradation-Aware Control Framework of Second-Life Batteries for PV-Integrated Building Energy Systems	Kaifeng Zhu
11:45–11:55	Paper (Short)	Quantum Optimization for Campus Microgrid Energy Redistribution: A Yonsei Digital Twin Case Study	Seohyun Lee
11:55–12:05	Paper (Short)	Evaluating Dynamic Rule-Based Control Components in a Hybrid Battery-Hydrogen Storage System	Geonho Jang

Track 4 — IEQ04 Indoor Environmental Quality 4 · Seminar Room 8

Chairs: Federico Tartarini; Jiayu Li

Time	Type	Title	Presenter / speaker
10:30–10:40	Paper (Short)	Thermal and Daylighting Performance of Smart Glazing with Dual Photo and Thermal Responses	Lei Zhang
10:40–10:50	Paper (Short)	Integrating Real-Time Occupancy into Ventilation and Indoor Air Quality Assessments for Classrooms	Bowen Du
10:50–11:05	Paper (Full)	Temperature Sequences Shape Passenger Thermal Comfort and Energy Use in High-Speed Railway Stations: A Case Study in the Cold Region of China	Meiling Li
11:05–11:15	Paper (Short)	Multi-Objective Optimization (MOO) of Hybrid Biobased and Conventional Shading Systems in Heritage Building Reuse	Zahra Shirzadnia
11:15–11:25	Paper (Short)	Integrated Operation for ERVs, EHPs, and Air Purifiers Considering Building-Intrinsic Performance	Sihyeon Kim
11:25–11:35	Paper (Short)	Spectral Daylight Performance of Static and Kinetic Facades: A Simulation-Based Evaluation of Photopic and Melanopic Illuminance for Circadian Lighting in Office Environments	Shuja Rehman
11:35–11:45	Paper (Short)	Evaluating Discomfort Glare in Badminton Halls Using Vertical Illuminance as a Proxy for UGR: From Laboratory Experiment to Field Validation	Tiara Nurhuda
11:45–11:55	Paper (Short)	Field-Measurement-Based Prediction of Indoor Illuminance and Glare with High Accuracy and Efficiency via Machine Learning	Lu Yang

Time	Type	Title	Presenter / speaker
11:55–12:05	Paper (Short)	Behavior-Aware Glare Prediction in Daylit Environments	Yuji Zhu
12:05–12:15	Paper (Short)	Indoor Environmental Quality (IEQ) Assessment of a Traditional Thai Museum: A Case Study in Samut Songkhram, Thailand	Tanadej Sikram

Track 5 — CLIMATE03 Carbon Neutral Buildings and Climate Action 3 · Seminar Room 5-6

Chairs: Shohei Miyata; Zheng Kai

Time	Type	Title	Presenter / speaker
10:30–10:45	Paper (Full)	Evaluating Drone Flight Stability during Rooftop Takeoff: A Coupled CFD and Flight Simulation Approach	Chao Lin
10:45–10:55	Paper (Short)	Development of a ZEB Design Optimization Tool Balancing Energy Performance and Economic Viability	Nozomu Ota
10:55–11:05	Paper (Short)	Overheating Risks in Canadian Long-Term Care Facility under Future Climate	Xinshuai Geng
11:05–11:15	Paper (Short)	Climate Resilience of Mixed-Mode Ventilation: Passive Design and Energy Performance under Future Tropical Climates	Siyu Cheng
11:15–11:25	Paper (Short)	A Methodology for Identifying Heat-Vulnerable Neighbourhoods in Greater London for ENVI-met Simulation	Siwei Chen
11:25–11:35	Paper (Short)	Classifying the Cooling Effects of Urban Lake Clusters during Heatwaves: A Case Study of Dalian	Mingxuan Guo
11:35–11:45	Paper (Short)	Development of Atmospheric CO_2 Capture Devices and Verification of Its Indoor Concentration Reduction Effect	Yuji Nagata
11:45–11:55	Paper (Short)	Future Climate Change Impacts on Ambient Air Pollution in the UK: 2050 and 2080 Scenarios	Zishen Bai
11:55–12:05	Paper (Short)	Urbanization-Induced Changes in Solar Radiation Reception: A Data-Driven Assessment	Yifan Guo
12:05–12:15	Paper (Short)	Cost-Energy Optimization and Carbon Mitigation for High-Rise Residential Building Model in Urban India	Satyanshu Kumar

Track 6 — ENERGY04 Energy Efficiency and Retrofitting 4 · Seminar Room 3-4

Chairs: Xilei Dai; Yue Lei

Time	Type	Title	Presenter / speaker
10:30–10:45	Paper (Full)	A Novel Heat Recovery System Using Power Transformer Waste Heat for Building Space Heating	Xiang Li
10:45–11:00	Paper (Full)	Power Reduction Potential of Coordinated Ceiling and Task Lighting under Variable Daylight and Occupancy	Kefan Chen
11:00–11:15	Paper (Full)	Robustness of Passive Retrofit Measures for Rural Houses Considering Occupant Behavior Uncertainties	Di Wu

Time	Type	Title	Presenter / speaker
11:15–11:25	Paper (Short)	Model Information Sufficiency for Derivation of Weather-Adaptive Mixed-Mode Ventilation Rules	Jihyeon Cho
11:25–11:35	Paper (Short)	Interpreting Temperature-Sensitive Electricity in Building Energy Signatures: Validation against Metered Air-Conditioning Use	Amanda Thounaojam
11:35–11:45	Paper (Short)	Operational-Planning Coupling in Building Retrofit Lifecycle Optimization: A Dynamic Simulation Framework for Quantifying Temporal Substitution Effects	Ao Wang
11:45–11:55	Paper (Short)	Robust Building Design for Uncertain Future Operational Shifting	Riccardo Talami
11:55–12:05	Paper (Short)	Quantitative Generation of Offline Optimal Control Strategies for Sewage Source Heat Pumps: An Energy-Comfort Constrained Discretization Approach	Zhihao Wang
12:05–12:15	Paper (Short)	Prioritizing Zero-Energy Building Technologies across Climate Zones: A Meta-Analysis of Energy, Carbon, and Economic Performance	Dayuan Wang

12:15–13:15 Lunch Break · Open Space outside LT421

Parallel Session F · 13:15–14:45

Track 1 — DATA09 Data-Driven Modelling (Machine Learning, AI) 9 · Design Lecture Theatre 421

Chairs: Filip Biljecki; Chun Fu

Time	Type	Title	Presenter / speaker
13:15–13:30	Paper (Full)	Integrating Large Language Models and Graph Neural Networks for Data-Driven Design Optimization of Low-Carbon Lightweight Hollow Partition and Façade Systems	Zhuyin Lu
13:30–13:45	Paper (Full)	Fault Propagation Graph for Explainable Automated Fault Detection and Diagnosis in AHU-VAV Systems	Yoshio Kitamura
13:45–14:00	Paper (Full)	RecTwin: A Digital Twin Framework Using Virtual Sensing for Occupancy-Aware Energy Modeling	Jayedi Aman
14:00–14:10	Paper (Short)	Privacy-Preserving Occupant Sensing Using Vision Transformer for HVAC Control	Tatsuya Chuman
14:10–14:20	Paper (Short)	Synergistic Spatial-Spectral Graph Convolutional Network for Multi-Scale Flow Field Prediction around Single Buildings	Hu Gao
14:20–14:30	Paper (Short)	Semantic Model-Assisted Spatio-Temporal Modeling for Large Indoor HVAC Systems	Jing Zhang
14:30–14:40	Paper (Short)	Prediction and Optimization of VRF System Performance Using a Variational Autoencoder	Momoe Ogawa

Track 2 — SIM10 Building and Urban-Scale Performance Simulation 10 · Design Lecture Theatre 422

Chairs: Yeonsook Heo; Hongyuan Jia

Time	Type	Title	Presenter / speaker
13:15–13:30	Paper (Full)	Scenario-Based Evaluation of Elevator Dispatch Strategies Using Agent-Based Modelling	Rahmatullah Abimanyu Putramustika
13:30–13:45	Paper (Full)	Exploring Augmented Reality in Supporting Learning Building Performance Simulation	Jieming Yan
13:45–13:55	Paper (Short)	Evaluation of Cognitive Responses to Biophilic Patterns of Ecological Finishes in Educational Virtual Environments	Seong Taek Kang
13:55–14:05	Paper (Short)	Optimising Industrial Buildings in India: A Calibrated Building Performance Simulation Case Study	Ishaan Mahajan
14:05–14:15	Paper (Short)	Balancing Daylighting and Views: A Parametric Optimizing Approach to Atrium Skylight Design	Shuyan Zhu
14:15–14:25	Paper (Short)	Simulation of the Introducing Effects a District Renewable Heat Network System in University Campus with Underground Utility Tunnels	Takao Katsura
14:25–14:35	Paper (Short)	Multi-Scale Thermal Environment Assessment of North Korean Urban Spaces: A Building, Neighborhood, and City-Scale Simulation Study Using Climate Studio and UTCI	Justin Lim

Track 3 — DATA10 Data-Driven Modelling (Machine Learning, AI) 10 · Design Lecture Theatre 423

Chairs: Cheng Fan; Xuyuan Kang

Time	Type	Title	Presenter / speaker
13:15–13:30	Paper (Full)	Advancing Wind Speed Prediction with Hybrid Urban Canopy Model Based on the Random Forest and SHAP Interpretability	Gigih R. Setyantho
13:30–13:45	Paper (Full)	Physically Consistent Ensemble Learning for Robust Thermal Comfort Forecasting and Model Predictive Control in Smart Buildings	Seow Hian Teo
13:45–13:55	Paper (Short)	A Generative Augmentation Framework for 3D Urban Digital Twins Leveraging Conditional Diffusion Model	Hyeonjin Jang
13:55–14:05	Paper (Short)	Towards Hourly Future Weather Data: A Novel Machine Learning Framework for Downscaling Low-Temporal-Resolution Meteorological Data	Lin Ye
14:05–14:15	Paper (Short)	Cross-Climate Transferability of Domain Adaptation for Solar Radiation Forecasting	Doheon Lee
14:15–14:25	Paper (Short)	SHAP-Informed Construction of Closed-Form Additive Models for Energy Benchmarking	Hanjoo Kim
14:25–14:35	Paper (Short)	CVAE Model-Based Generation of Individual Daily Activity Patterns from GPS Trajectory Data	Ryusei Kawai

Track 4 — IEQ05 Indoor Environmental Quality 5 · Seminar Room 8

Chairs: Jianlin Liu; Yue Lei

Time	Type	Title	Presenter / speaker
13:15–13:25	Paper (Short)	Wind-Driven Rain in the Tropics: Field Measurement and Analysis at a Semi-Enclosed Walkway in Singapore	Shu Xuan Tricia Teo
13:25–13:35	Paper (Short)	Beyond Correlation: Interpreting the Thermal Impact of Occupant Behavior in Indoor Thermal Dynamics	Heeyoon Kim
13:35–13:45	Paper (Short)	Exploring the Drivers for Electricity-Saving Behavior in Modular Residential Buildings: An Extended Theory of Planned Behavior Framework	Cong Yu
13:45–13:55	Paper (Short)	Indoor Environmental Performance of a Naturally Ventilated Museum in Vietnam Evaluated by Field Measurements and CFD	Hirotaka Kubo
13:55–14:05	Paper (Short)	A Variance-Controlled Simulation Framework for Multi-Domain BACS Evaluation under Parametric Uncertainty	Federico Garzia
14:05–14:15	Paper (Short)	3D-Printed Clay Envelope for Moisture Removal	Xuhan Zhao
14:15–14:25	Paper (Short)	Simulation Analysis of Effects of Seating Layout Differences on Seat Selection Behavior in Hospital Waiting Room	Hideaki Nagano
14:25–14:35	Paper (Short)	An Exploratory Workflow for Assessing Workplace Window Views through Visual Features	Liren Wang
14:35–14:45	Paper (Short)	Impact of Insulation Vapor Resistance on Moisture Buffering in Loess Brick Walls	Huihua Liu

Track 5 — CLIMATE04 Carbon Neutral Buildings and Climate Action 4 · Seminar Room 5-6

Chairs: Nari Yoon; Chao Lin

Time	Type	Title	Presenter / speaker
13:15–13:25	Paper (Short)	Effects of Blue-Green Corridors on the Future Urban Climate in Jinan under a Multi-GCM Approach	Siwei Dai
13:25–13:35	Paper (Short)	Advancing Carbon Awareness in Early Design through Transparent Embodied Carbon Modelling	Sezgi Yalcinkaya Hamarat
13:35–13:45	Paper (Short)	A Framework for Whole Life Carbon Assessment of HVAC Systems Using Early-Stage Design Information	Saki Kanouchi
13:45–13:55	Paper (Short)	Material Quantity Uncertainty and Its Implications for Embodied Energy Assessment in Housing Construction: A Case Study	Jagriti Kaushal
13:55–14:05	Paper (Short)	Quantifying Climate Impacts on Energy Consumption and Efficiency of Subway Station HVAC Systems: A Comparative Study across Different Climate Zones	Yu-Fei Tang
14:05–14:15	Paper (Short)	City-Specific Passive Design Performance under RCP8.5 Climate Change: Evidence from Major Japanese Cities	Xiong Xiao

Time	Type	Title	Presenter / speaker
14:15–14:25	Paper (Short)	Tropical Uplift: Re-Imagining Housing in Singapore through the Lens of Passive and Sustainable Cooling	Kai Zheng
14:25–14:35	Paper (Short)	Assessing Demand-Side Urban Energy Resilience: A Building-Stock Analysis of Hong Kong under Extreme Heat and Power Outages	Qinhui Lu

Track 6 — ENERGY05 Energy Efficiency and Retrofitting 5 · Seminar Room 3-4

Chairs: Genku Kayo; Wonjun Choi

Time	Type	Title	Presenter / speaker
13:15–13:25	Paper (Short)	On-Site Data Processing and Energy Profiles of Multi-Chiller Large-Capacity Cooling Systems in High-Tech Manufacturing Buildings	Wenxuan Zhao
13:25–13:35	Paper (Short)	An Open and Streamlined Ray Tracing Workflow for Calculating Spatial Distribution of Mean Radiant Temperature Using 3D Geometry and Thermal Point Cloud Data	Kian Wee Chen
13:35–13:45	Paper (Short)	Cycle-Resolved EnergyPlus Co-Simulation of Air-Source Heat Pump Boilers for Refrigerant Substitution	Habin Jo
13:45–13:55	Paper (Short)	Revising Thailand’s Building Energy Code: An OTTV-Based Envelope Assessment Model under Climate Change	Peerapat Harileartrat
13:55–14:05	Paper (Short)	Investigating the Thermal Performance of Shading on Opaque Façade Components in Tropical Climate	Aaditya Sanyal
14:05–14:15	Paper (Short)	Study on Reducing Cooling Load and Improving Thermal Environment in School Buildings: Evaluating Retrofit Effects of Solar Shading Devices, Inner Windows, and Energy Recovery Ventilation in Middle-Floor Classrooms	Kento Kojima
14:15–14:25	Paper (Short)	Correcting Solar-Induced Surface Temperature Bias in Daytime IRT-Based U-Value Estimation	Ahhyun Song
14:25–14:35	Paper (Short)	Assessing a Proposed Skylight Shading Retrofit for a Railway Station: A Measurement-Based Simulation Study	Xiaoyang Lv
14:35–14:45	Paper (Short)	Semantic-Enabled Modeling and Optimization of Chiller Plant Operation	Xiaoyu Jia

14:45–15:00 Session Changeover

Parallel Session G · 15:00–16:30

Track 1 — DATA11 Data-Driven Modelling (Machine Learning, AI) 11 · Design Lecture Theatre 421

Chairs: Zhiang Zhang; Michael Kim

Time	Type	Title	Presenter / speaker
15:00–15:10	Paper (Short)	Adaptive Cooling Optimization for AI Computing Centers through a Cyber-Physical Digital Twin	Shiyuan Ma
15:10–15:20	Paper (Short)	Development of Causality Metric for Data-Driven Model: From Dynamic Fidelity to Representational Fidelity	Jin-Hong Kim
15:20–15:35	Paper (Full)	CORE-ELITE: An IoT and Artificial Intelligence-Based Cognitive Digital Twin Ecosystem for Optimizing Energy Efficiency, Indoor Environmental Quality and Grid Interaction	Nicola Sorrentino
15:35–15:45	Paper (Short)	Rethinking Residential Energy Use: Data-Driven Typologies for Responsive Architectural Design	Jie Li
15:45–15:55	Paper (Short)	A Clustering-Based Approach for Developing Usage Profiles for Building Energy Simulation	Yejin Lee
15:55–16:05	Paper (Short)	Study on Power Disaggregation Techniques for Multi-Site Commercial Facilities	Ami Yoshita
16:05–16:15	Paper (Short)	Dreaming for Efficient Climate Control Strategies: World Models for HVAC Optimization	Anh Tuan Nguyen

Track 2 — DATA+IEQ12 Data-Driven Modeling + Indoor Environmental Quality 12 · Design Lecture Theatre 422

Chairs: Steve Kardinal Jusuf; Chun Fu

Time	Type	Title	Presenter / speaker
15:00–15:15	Paper (Full)	A Physics-Informed Causal Approach for Overcoming Data Bias in Cooling Tower Modeling	Seon-Young Heo
15:15–15:30	Paper (Full)	Personal Environmental Control System (PECS) for Enhanced Comfort in Aircraft Cabin	Ying Zhen Peony Phua
15:30–15:45	Paper (Full)	Analysis of Model Shift and Uncertainty in Bayesian Personalized Thermal Comfort Models under Different Occupancy Conditions	Yu Hsin Wu
15:45–16:00	Paper (Full)	Diffusion-Based Policy Transfer for HVAC Control via Implicit Q-Learning	Yoonjee Jung

Track 3 — SIM11 Building and Urban-Scale Performance Simulation 11 · Design Lecture Theatre 423

Chairs: Yan Ding; Kian Wee Chen

Time	Type	Title	Presenter / speaker
15:00–15:10	Paper (Short)	Analysis of Environmental Impacts on the Cheonggyecheon Walkway After Sewoon District High-Rise Redevelopment, Seoul Korea	Siyun Jung
15:10–15:25	Paper (Full)	Energy Modelling from Typical Buildings to Urban Building Stocks: A Scaling Method Development Using New Zealand Residential Single-Unit Dwellings	Mahdi Mohkam

Time	Type	Title	Presenter / speaker
15:25–15:35	Paper (Short)	Bayesian Optimization for Scalable Calibration of Data Center Digital Twins for Sustainability	Pierre Huyn
15:35–15:45	Paper (Short)	Grid-Based Simulation of Urban Heat Island–Energy Coupling via CTTC and Grey-Box Load Modeling	Jun Xiao
15:45–15:55	Paper (Short)	Parametric Evaluation of Three Urban Residential Design Schemes Using Grasshopper: Quantifying Visibility, View Sheds, and Solar Access in Apgujeong District 2, Seoul	Cheolhwan Kim
15:55–16:05	Paper (Short)	A Study on the Thermal Comfort of Apartment Complexes by Development Period Using Climate Studio: Focused on the Large-Scale Apartment Complexes in the Gyodae Station Area, Seoul	Minju Kim
16:05–16:20	Paper (Full)	National Building Compactness of Infiltration Rate for the Saudi Housing Stock	Azzam Alosaimi

Track 4 — IEQ06 Indoor Environmental Quality 6 · Seminar Room 8

Chairs: Bowen Du; Kun Lyu

Time	Type	Title	Presenter / speaker
15:00–15:10	Paper (Short)	Case Studies of HVAC Systems Aiming to Achieve Both Thermal and Air Quality Comfort and Energy Efficiency in a Japanese Office Building	Makiko Ukai
15:10–15:20	Paper (Short)	Field Measurement on the Impact of Membrane Structures for Microclimatic Regulation and Outdoor Thermal Comfort	Xiling Lu
15:20–15:30	Paper (Short)	Beyond Air Temperature: Elevated Radiant Temperatures as a Key Driver of Discomfort in Tropical Climate	Omar Elrawy
15:30–15:40	Paper (Short)	Performance Analysis of Hollow-Fiber Membrane Humidifiers Applied to Air-Conditioning Systems: Effect of Fiber Arrangement	Jeong-Min Oh
15:40–15:50	Paper (Short)	Numerical Investigation of Appropriate Reductions in Building Air-Conditioning Energy Consumption (Part 1): Development of a New Evaluation Index for Achieving Both Thermal Comfort and Energy Efficiency	Moe Nakamura
15:50–16:00	Paper (Short)	Numerical Investigation of Appropriate Reductions in Building Air-Conditioning Energy Consumption (Part 2): Evaluation Based on the Coupling of Indoor Thermal Environment Analysis, Human Thermal Model, and Human-Body Exergy Analysis	Hiroto Ito

Track 5 — CLIMATE+ENERGY05 Carbon Neutral Buildings and Climate Action + Energy Efficiency and Retrofitting · Seminar Room 5-6

Chairs: Xue Liu; Mingyang Qian

Time	Type	Title	Presenter / speaker
15:00–15:15	Paper (Full)	Dynamic Life Cycle Assessment of Buildings under Future Climate and National Climate Pledges	Mehmet Akif Aydin
15:15–15:25	Paper (Short)	Dynamic Impacts of Climate Change on the Energy Performance and Parameter Sensitivity of High-Rise Residential Buildings in Hong Kong	Yumin Liang
15:25–15:35	Paper (Short)	Full-Scale Experimental Assessment of a Dual-Mode Thermotropic Window for Energy-Efficient Façade Retrofitting	Yilin You
15:35–15:45	Paper (Short)	Dynamic Modeling of Indoor CO_2 Concentration for Occupant Estimation Using Response Factor Method	Shintaro Murakami
15:45–15:55	Paper (Short)	Passive Design Optimization of Symmetrical Bilateral Openings School Classroom in Tropical Climate Indonesia	Muhammad Ridlo Haqiqi
15:55–16:05	Paper (Short)	Study on Adaptability and Energy-Saving Performance of Hydrogel Glass Applied to Glass Plant Factories	Yiping Wu
16:05–16:15	Paper (Short)	Development of Climate Sensitivity Models for an Urban Energy Simulator Considering Building Type and Regional Climate	Manami Aoki
16:15–16:25	Paper (Short)	Comparative Building Performance Assessment of Residential, Composite, Insulated and Net-Positive Buildings Using an IESVE-Based Simulation Framework	Viraj Shah

Track 6 — GRID+ENERGY06 Smart Grid and Energy Efficiency 6 · Seminar Room 3-4

Chair: Sicheng Zhan

Time	Type	Title	Presenter / speaker
15:00–15:15	Paper (Full)	Data-Enabled Predictive Control (DeePC) for Improving Energy Efficiency of HVAC Systems in Commercial Buildings	Rezky Mahesa Nanda
15:15–15:25	Paper (Short)	Bridging Thermal Performance and Carbon Economics: PCM-Insulation Combinations Strategies for Sustainable Housing	Prabhat Sharma
15:25–15:35	Paper (Short)	Energy Impacts of Membrane Humidity Pump-Assisted Liquid Desiccant Air Conditioning System	Hye-Jin Cho
15:35–15:45	Paper (Short)	Determining Sensor Deployment Strategies for Accurate Operational Carbon Emission Assessment of Existing Buildings under Different Scenarios: A Case Study in Hong Kong	Yucheng Guo
15:45–15:55	Paper (Short)	Research on Reinforcing the Dehumidification Capacity of Existing Air Conditioning Systems Using Membranes	Kento Tsuji

Time	Type	Title	Presenter / speaker
15:55–16:05	Paper (Short)	From Passive Storage to Active Thermal Management: Unlocking Phase Change Materials Potential through Photovoltaic-Driven HVAC Integration in Buildings	Xin Liu
16:05–16:15	Paper (Short)	Performance Characteristics of a Quasi-Isothermal Membrane Humidifier for HVAC Applications	Seong-Yong Cheon
16:15–16:25	Paper (Short)	Integrating Building Performance Simulation into Cost-Effective Retrofitting Strategies for Sustainable Buildings	Ahamed Rikas Rauff

16:30–16:45 Afternoon Coffee Break · Open Space outside LT421

16:45–17:45 Keynote Address 3 - Prof. Holly Samuelson · Design Lecture Theatre 421
Chair: Clayton Miller

17:45–19:00 Transfer to Conference Dinner Venue · SDE3 Foyer (Level 1 Pick Up Point)

19:00–21:30 Conference Dinner and Awards · Pan Pacific Singapore

Presentation guidance

Oral presentations

- **Full papers:** 15 minutes in total (12 minutes presentation + 3 minutes Q&A).
- **Short papers:** 10 minutes in total (8 minutes presentation + 2 minutes Q&A).
- **Timekeeping:** Sessions run strictly to time and papers are presented in the order printed in this programme, so attendees can move between parallel sessions.
- **Slide template:** Please use the official ASim 2026 PowerPoint template available from https://asim2026.sg/submission-categories.php.
- **Upload:** Upload your final presentation (.pptx) to ConfTool by **12 November 2026, 23:59 (Singapore Time)**.
- **Computers:** All presentations are delivered from the conference-provided computer (laptop or desktop) in each room, so that sessions stay on time. Please do not plan to switch to your own laptop. If a switch is unavoidable, it is at the session chair's discretion and any changeover time is deducted from your presentation time. Embed any non-standard fonts and include videos within the .pptx file.
- **On the day:** Arrive in your session room at least 10 minutes before the session starts, introduce yourself to the session chair and check that your slides open correctly.

Poster presentations

- **Poster size:** A0 portrait (84.1 cm × 118.9 cm). Authors print and bring their own poster.
- **Poster template:** Please use the official ASim 2026 poster template, available from https://asim2026.sg/submission-categories.php.
- **Logos:** Do not modify the conference logos in the header. Institutional, project or funding logos may be placed in the footer.
- **Display location:** Open Space outside Design Lecture Theatre 421 (SDE3, Level 4). Poster boards and mounting materials are provided.
- **Setup:** From 07:30 on Day 1, during registration.
- **Poster session:** Day 1, 12:15–13:15, during lunch. Please stand by your poster to discuss your work with attendees.
- **Removal:** Take down your poster by the end of Day 2.
- **Digital upload:** Not required.

Session and invited-talk chairs

General guidelines (all chairs)

- **Before the session:** Arrive at your assigned room at least 10 minutes before the session begins. Meet your co-chair (if applicable), presenters and the two student helpers assigned to the room.
- **Opening and moderation:** Start on time, introduce each speaker briefly, and moderate questions from the audience. Please keep presentations aligned with the published schedule, as attendees may move between parallel sessions.
- **Technical support:** Student helpers will preload presentations onto the conference-provided computer and assist with AV, timekeeping and communication with the organising committee.

Technical paper sessions

- **Presentation timings:**
  - **Full papers:** 15 minutes (12-minute presentation + 3-minute Q&A).
  - **Short papers:** 10 minutes (8-minute presentation + 2-minute Q&A).
  - Please enforce the allocated times.
- **Computers:** Presentations should run from the conference-provided computer wherever possible, so that the session stays on schedule. Presenters should not switch to their own laptops. You may allow a switch where it is unavoidable, but any time lost in the changeover is taken from that presenter's allocated time, so that the session stays on track.
- **Chairing arrangements:** Where two chairs are assigned, they may divide the introductions and Q&A moderation between themselves.

Invited talks

- **Presentation timings:** Keep the introduction to less than 1 minute, followed by a 25-minute presentation and approximately 4 minutes of Q&A, within the 30-minute slot.
- **Certificate presentation:** At the end of the Q&A, the chair should present the certificate of appreciation to the invited speaker. The student helpers will have the certificate ready and assist with a photograph.

Venue and practical information

Registration desk

- Location: Open Space outside Design Lecture Theatre 421 (SDE3, Level 4)
- Opening hours: Day 1 (16 November) from 07:30; Day 2 (17 November) from 08:00. There is no registration desk on Day 3.
- Route: see "Getting to the venue" near the front of this booklet (the stair route is recommended).

Venue

- Official venue name: SDE1 & 3 and SDE4, College of Design and Engineering, National University of Singapore
- Buildings: The conference takes place across three neighbouring buildings. SDE1 and SDE3 are adjoining and are treated as one venue (SDE1 & 3); SDE4 is the separate building next to them.
- Address: 4 Architecture Drive, Singapore 117566
- Getting there: see "Getting to the venue" near the front of this booklet.



SDE1 & 3



SDE4

Rooms

SDE1 & 3

Room	Use	Floor/location
Design Lecture Theatre 421	Opening, keynotes, invited talks, sponsor sessions and parallel sessions (Track 1)	SDE3, Level 4 (SDE3-04-07)
Design Lecture Theatre 422	Invited talks, sponsor sessions and parallel sessions (Track 2)	SDE3, Level 4 (SDE3-04-06)
Design Lecture Theatre 423	Invited talks, sponsor sessions and parallel sessions (Track 3)	SDE3, Level 4 (SDE3-04-05)
Seminar Room 3-4	Parallel sessions (Track 6)	SDE1
Seminar Room 5-6	Parallel sessions (Track 5) and Day 3 workshop	SDE1
Seminar Room 8	Invited talk, parallel sessions (Track 4) and Day 3 workshops	SDE3, Level 4 (SDE3-04-09)
Open Space outside LT421	Registration (Days 1–2); coffee breaks and lunch on all three days; poster display (Days 1–2) and poster session (Day 1); Day 3 tour meeting point	SDE3, outside Design Lecture Theatre 421

SDE4

Room	Use	Floor/location
Executive Room 1-2	Day 3 workshop and tour meeting point	SDE4, Level 4 (SDE4-04-01)
SDE4 Open Plaza	Welcome reception (Day 1)	SDE4, Level 3

Conference dinner

- Event: Conference Dinner and Awards
- Date and time: Day 2 (17 November), 19:00–21:30
- Venue: Pan Pacific Singapore
- Address: 7 Raffles Boulevard, Singapore 039595
- Transfer: Transport departs from the SDE3 Foyer (Level 1 pick-up point).
- Map: https://maps.app.goo.gl/F3T9k8YPFJ9pVvui8 (or scan the QR code)

Pan Pacific Singapore on Google Maps

Wi-Fi

Complimentary Wi-Fi is available across the NUS campus.

- Connect to the "NUS_Guest" wireless network.
- Select "Event Login" on the login page.
- Enter Wi-Fi PIN: 0Z9FCN
- Valid from 16 to 18 November 2026.

Delegates from participating institutions may also connect using their home-institution eduroam credentials.

Emergency numbers

Service	Number
Emergency Ambulance & Fire Service	995
Non-Emergency Ambulance Service	1777
Police Emergency	999
NUS Campus Emergency Hotline	+65 6874 1616

Assistance

For help during the conference, visit the registration desk at the Open Space outside Design Lecture Theatre 421 or speak to any member of the organising team.

Travelling to Singapore

Please refer to the Immigration & Checkpoints Authority website (https://www.ica.gov.sg) for entry requirements. All travellers are required to submit the SG Arrival Card within three days (including the day of arrival) before arriving in Singapore. For information about Singapore and local attractions, please refer to the Visit Singapore website (https://www.visitsingapore.com).

Transportation

The Changi Airport transport guide (https://www.changiairport.com) provides useful information on transport options out of the airport.

Taxi

Taxis are available for hire at the taxi stands in the Changi Airport arrival areas. A ride to the city takes about 30 minutes and costs between S$25 and S$50. All fares are metered. For more information, please refer to the Land Transport Authority website (https://www.lta.gov.sg).

Private hire car

For transport from the airport, you may also book private hire vehicles through mobile apps of operators such as Grab, Gojek, Tada and Ryde. Make a reservation using the mobile apps (available on the Apple App Store and Google Play Store), then proceed to the designated arrival pickup locations.

Other information

Smoking and vaping

NUS is a smoke-free campus. Please note that vaping is illegal in Singapore and any individuals caught possessing, using, or purchasing e-vaporisers or e-cigarettes will be subject to prosecution by the Singapore law enforcement agencies.

Weather

Singapore experiences year-round high temperatures and humidity. There may be rain in Singapore any day of the year. On a typical day, the temperature in Singapore ranges between 28°C and 32°C.

What to wear: Go 25

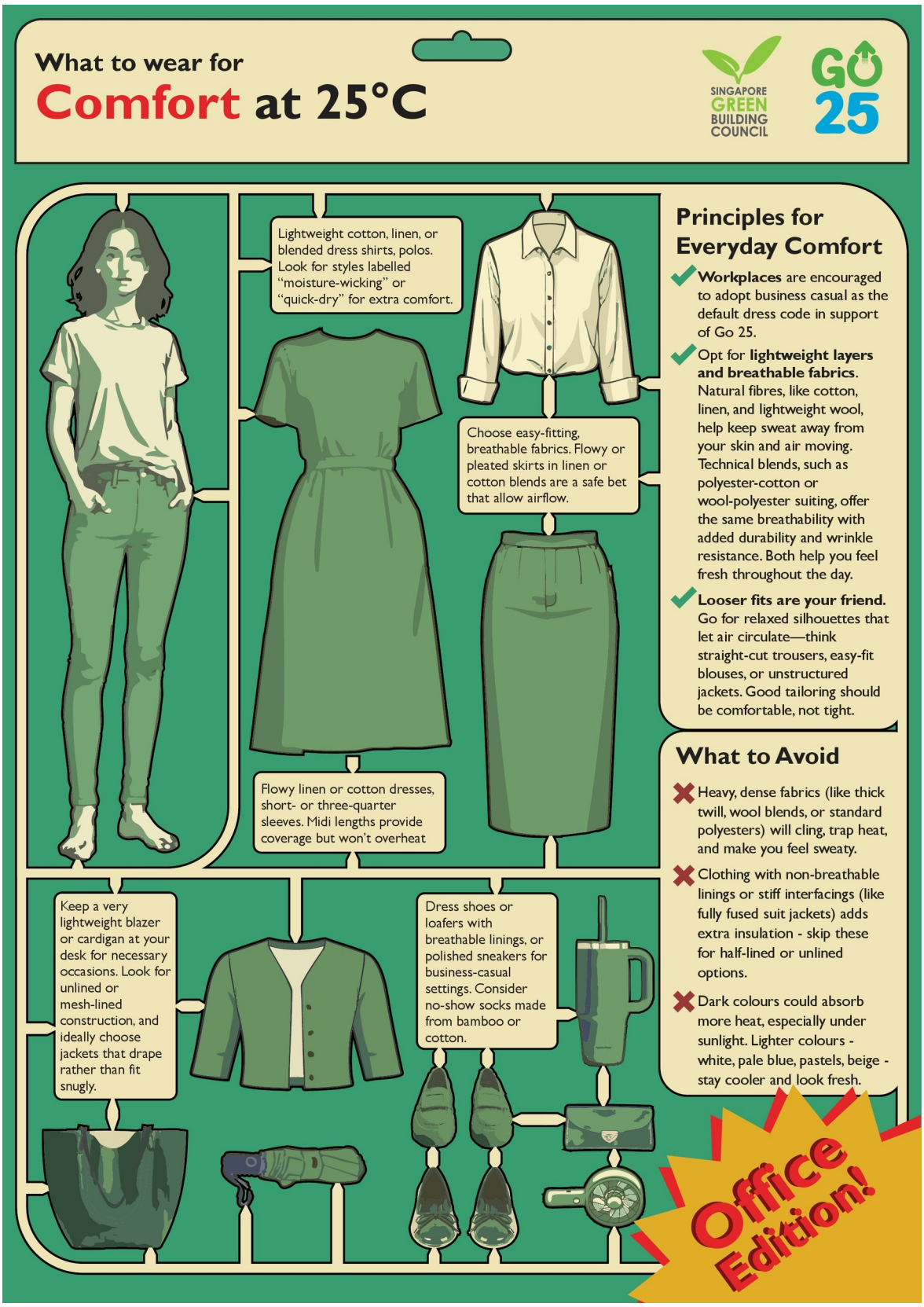
Conference rooms are kept at around 25°C, in support of the Singapore Green Building Council's Go 25 movement to reduce overcooling and save energy. We recommend business-casual attire in light, breathable fabrics such as cotton or linen. A jacket is not needed, but you may want a light layer. See the Go 25 Climate Appropriate Attire Guide at the end of this section; the full guide is online at https://heyzine.com/flip-book/go25-climate-appropriate-attire-guide.

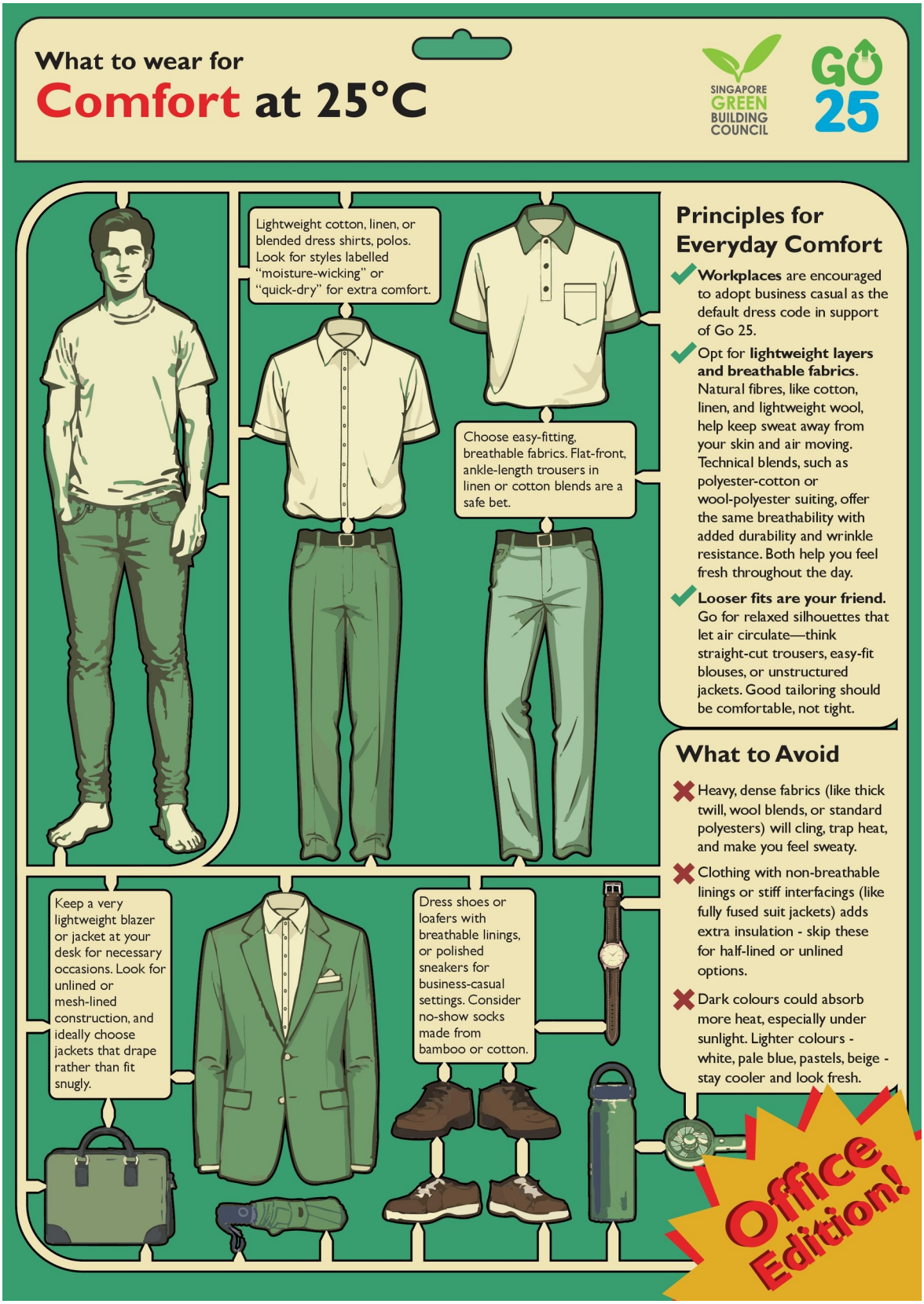
Voltage

Singapore operates on a 230V supply voltage at a frequency of 50Hz. For Singapore, the commonly used electrical plug type is G. Plug type G has three rectangular pins in a triangular pattern.

Go 25 Climate Appropriate Attire Guide

Reproduced courtesy of the Singapore Green Building Council (developed in collaboration with the Singapore Fashion Council).
View the full guide: https://heyzine.com/flip-book/go25-climate-appropriate-attire-guide




What to wear for
Comfort at 25°C
SINGAPORE GREEN BUILDING COUNCIL
GO 25
Lightweight cotton, linen, or blended dress shirts, polos. Look for styles labelled "moisture-wicking" or "quick-dry" for extra comfort.
Choose easy-fitting, breathable fabrics. Flat-front, ankle-length trousers in linen or cotton blends are a safe bet.
Keep a very lightweight blazer or jacket at your desk for necessary occasions. Look for unlined or mesh-lined construction, and ideally choose jackets that drape rather than fit snugly.
Dress shoes or loafers with breathable linings, or polished sneakers for business-casual settings. Consider no-show socks made from bamboo or cotton.
Principles for Everyday Comfort
Workplaces are encouraged to adopt business casual as the default dress code in support of Go 25.
Opt for lightweight layers and breathable fabrics. Natural fibres, like cotton, linen, and lightweight wool, help keep sweat away from your skin and air moving. Technical blends, such as polyester-cotton or wool-polyester suiting, offer the same breathability with added durability and wrinkle resistance. Both help you feel fresh throughout the day.
Looser fits are your friend. Go for relaxed silhouettes that let air circulate—think straight-cut trousers, easy-fit blouses, or unstructured jackets. Good tailoring should be comfortable, not tight.
What to Avoid
Heavy, dense fabrics (like thick twill, wool blends, or standard polyesters) will cling, trap heat, and make you feel sweaty.
Clothing with non-breathable linings or stiff interfacings (like fully fused suit jackets) adds extra insulation - skip these for half-lined or unlined options.
Dark colours could absorb more heat, especially under sunlight. Lighter colours - white, pale blue, pastels, beige - stay cooler and look fresh.
Office Edition!

Sponsor profiles

Platinum sponsor

IES

Website: https://www.iesve.com

IES is a global climate tech company delivering world leading, physics-based software and solutions that empower designers, engineers and operators to create and maintain energy efficient buildings. Over 30+ years, we've built a reputation as the leading innovator in integrated performance-based analysis tools supporting the design, retrofit and operation of energy efficient buildings.

Gold sponsor

DesignBuilder

Website: https://designbuilder.co.uk

DesignBuilder integrates EnergyPlus, Radiance and CFD in one user-friendly interface, trusted by consultancies and universities worldwide. From one model: energy, comfort, HVAC, daylighting, optimisation, uncertainty/sensitivity analysis, scripting, calibration, CFD, compliance/certification. Fast workflows and visual QA minimise modelling time and risk. Cost-effective shareable/flexible licensing, expert support, comprehensive training, free 30-day trial.

Silver sponsors

EKO

Website: https://eko-instruments.com

Founded in Japan in 1927, EKO Instruments has pioneered environmental and scientific measurement technologies for nearly a century. Its innovations help professionals worldwide better understand and protect our planet.

Building System and Diagnostics Pte Ltd (BSD)

Website: https://bsd.com.sg

BSD is a Singapore-based sustainability and green building consultancy with over 20 years' experience and 1,000 projects across the region. Its accredited professionals deliver certifications, energy optimisation, smart planning, commissioning and training to create measurable, low-carbon built-environment impact.

ENVEA

Website: https://envea.global

ENVEA is a global solutions provider for ambient environment and industrial process monitoring. With a strong local presence across Asia, we help industries, research institutes and authorities meet regulatory compliance, optimise environmental performance and advance sustainability goals.

Tian Building Engineering

Website: https://www.building-engineering.de/

TIAN Building Engineering is a specialist building-performance engineering firm providing CFD, IAQ, energy, thermal comfort, fire and smoke simulation, consultancy and training. We also develop BIM-centric simulation software, including FlowSIM Pro, supporting architects and engineers in designing healthier, more efficient buildings.

ASIM 2026 16 - 18 Nov Singapore

SEE YOU NEXT TIME

Thank you

for joining ASim 2026 in Singapore

Towards a

Smart and Carbon Neutral Future

ONLINE PROGRAMME

Sessions and paper abstracts on ConfTool

www.conftool.com/asim2026/sessions.php

NUS National University of Singapore

International Building Performance Simulation Association