

## Generative Design – Does it take architecture somewhere new?

FoA is embarked on its own contribution to the brave new world of generative design. We'll call it GenDes-FoA for now. Among other things, we're investing 1M HKD in a faculty-wide project to develop GenDes/AI/ML/ER-enhanced teaching and learning experiments in 10 modules, with six months of experimental sharing, preparation, and design; one full academic year of experiment; and six more months of reviewing, analysing, adjusting, and writing up the experiments for sharing internationally. Each of the 10 project leaders is already AI-savvy and experimenting in their teaching. Each will work with at least one other colleague who is keen to embark on their own AI-teacher journey. In preparation for this, we recently had a conversation about a GenDes tool that takes a crumpled piece of paper, creates a malleable digital model, and generates architectural designs to inspire further exploration and iteration. After some discussion, inspired by the beauty of the crumpled-paper design, I asked some of our FoA architects:

### ***Does it take architectural education somewhere new?***

Alain Chiaradia (AA-trained architect, former board and technical director of Space Syntax Ltd London, and well-known urban design teacher) was the first to respond. I asked him to write it up into the following DRup blog. His conclusion relates to the importance of architectural discourse, which triggers further profound thoughts from two other FoA architects, which will be featured in the next two DRups.

Chris Webster  
Dean, FoA

## **Alain Chiaradia on GenDes, AI paper-crumpling and architectural discourse<sup>1</sup>**

A 'Midjourney for Architecture', LookX's AI tool for transforming sketches (or squashed paper) into a digital model is divided into Inspiration Generator, Model Training, and Sharing Community. The platform claims that it is specifically trained in architectural knowledge, algorithms and processes. LookX is 'equipped with industry's semantics and annotations,' as quoted in [Cajsa Carlson's Dezeen article](#). The article cites Tim Fu from STF (which emerged from Zaha Hadid Architects), using the tool to turn a crumpled sheet of paper into designs that capture the design languages of Frank Gehry, Zaha Hadid, OMA, etc.

The immediate impact of this kind of AI-enhanced design generator is a magnitude change: the speed of fitting acceptable configurations increases.

Generally, this can be seen as a process of hypothesis generation, generating initial morphic ideas/concepts and then testing it. It does not matter where the ideas come from – the crumpled paper metaphor is only one of an infinite number of sources. What matters is whether an idea (generated by AI crumpling, real crumpling, or harnessed from an architect's sleeping dream) can be tested. Put another way: can the 'hypothesis' be inserted/articulated in architectural discourses and thereby gain legitimacy and currency? This can be thought of as socialising a design concept through a process of articulating its values.

Another interpretation of what's happening is that the crumpled paper is a drawing/model in art, followed by application of a paranoiac-critical method (Lacan, Dali, Surrealism and Oulipo). Paranoid-critical activity is the fabrication of evidence for unprovable speculations and the subsequent grafting of this evidence on the world so that a 'false', 'new', or 'hypothetical' fact takes its unlawful/lawful place among 'real' facts. Paranoiac-critical activity is the ability of human subjectivity to perceive links between unrelated things, identify unexpected relationships and create new configurations based on the critical and systematic objectivity of their associations and interpretations. In the context of generative AI, the paranoiac-critical method could be called a critical hallucination method and viewed as a contemporary update of surrealist and related (e.g. Dada) methods. So far, generative AI has done well on the hallucination side. Underlying its feats is the computational technology of Generative Adversarial Networks (GAN) (Goodfellow et al. 2014). The adversarial part of a GAN algorithm pits two AI 'brains' against each other to optimise pattern recognition and reproduction, one being a 'learning' brain and the other a 'testing' brain. Can adversarial GAN be critical, or could it become so? The connection between GANs and the paranoiac-critical method lies in their shared exploration in generating new and unexpected outputs based on existing inputs. In the case of the paranoiac-critical method, the method aims to create 'surreal' configurations by identifying connections between unrelated elements in their environment. GANs generate new data samples by learning the underlying patterns and relationships in the input data and applying these patterns to create new realistic outputs: judging unexpected outputs vs realistic outputs is a value interpretation process and has domain knowledge at its core.

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<sup>1</sup> With editorial input from Chris Webster, with the author's permission.

GANs that underlie GenDes are typically configured and calibrated to identify and reproduce 'real' 2D/3D patterns/designs/phenomena (such as a Gehry building or a Persian cat). The algorithm learns how to distinguish between Gehry and Hadid or Persian and Abyssinian cat, or more basically cat and dog. How might it produce and identify completely novel forms and images? Like a 'Cog', a 'Dat', or a Gehry-Hadid building? Or natural-looking architecture configured on fractal dimensions rather than parametric curves? One way might be to stop a 'real-image' calibration mid-process. And indeed, the internet is flooded with surreal images created in this way.

### ***How does all this fit into the ideation stage of our design studios?***

Let's take the argument closer to architecture and generative tools in architectural design. There is a rich history of methods that may be considered intellectual precedents. For example, da Vinci's cloud drawing theory (Damisch 1972); Piranesi's Imaginary Prisons; early 20th century Russian Avant-Garde Chernikhov's teaching method; architectural fantasy – fantasy meaning capacity of inventiveness and power of imagination; the Bauhaus' education programme's (Moholy-Nagy, 1947) use of scientific equipment to make art; Libeskind's Between Zero and Infinity collages and models (1981); and of course, Frank Gehry's 45-year-old design method, using 'crumpled paper' models.

More generally, these represent the conjecture/test, the form-to-programme design approach (Rhowbotham 1995), which allegedly subverted/reverted form-follows-function into function-follows-form. The Form to Programme is a well-known and widely used architectural design method taught at the AA, with Zaha Hadid being a prominent exponent. In the language of probability and formal logic, the form, however generated and imagined, becomes a kind of Bayesian prior condition that shapes the architectural hypothesis at a high level. The initial form is generated between 'quasi-random' sampling of the universe of solution possibilities, with a certain (unknown) 'Bayesian' prior probability created by the materiality of the paper and the strength of the crumple (Gehry), and the dimensions of science and technology explored (Bauhaus). Depending on the model, the hyper-parameters of the form may be between conceptually irrational (unimagined/unimaginable) but physically rational (determined by the paper's material properties). An AI-generated form may go beyond the rational either by algorithmic design or in the process of exploring search space bounded by rational hyper-parameters that do not necessarily prevent unnatural paths along the way. Post-rationalising the resultant forms through performative analyses into an acceptable architectural configuration, visualisation rendering, or 3D printed model, converts it into the rhetoric of a physical scale model as prototype buildable architecture.

The step change accompanying GenDes is the high speed of generating design forms and fitting them to acceptable architectural configurations. Architectural discourse and history play a part here. Discourse produces models, types, styles, rules and so on. These can be coded into a GenDes algorithm or can be learned from a training base of input designs.

However, the issue of socialisation remains outside the machine. One could use Generative AI to write up a description of a discovered form, yet the socialising

discourse surrounding a design will be highly contextual. Specific domain knowledge and highly nuanced knowledge of architectural narrative and its relation to the specific cultural, built environmental and social context are needed to persuade clients and third parties of a designed artefact's qualities, values and impacts.

This also means a rebalancing between the generative, the productive, and performative evaluations and communications. We are better at choosing than generating anyway, as we don't always know what we want until we dream/see/use 'it'. However, we may sometimes struggle to disentangle as to why. The LookX example above is a direct reification of Gehry's design procedure. Surfing on speed esthetic and politics of architectural form, it eludes how many attempts had been discarded until the publishable designs were selected and how much energy and time were consumed to produce them.

### ***Why do architectural designs have to be socialised by discourse?***

Socialisation by discourse in the context of architectural design education allows for the integration of diverse perspectives and the demonstration and sharing of understanding within pre-existing discourses. Socialising also helps collaborative decision-making within the design team. Architectural designs are not just about aesthetics or functionality; they also impact their spaces' social, cultural, and environmental aspects. By engaging in discourse, architects, designers, and other stakeholders can better understand and share the implications of design choices, negotiate trade-offs, and ensure that the design aligns with the values and needs of the community/stakeholders it is intended for, even if it is a 'paper architecture' or educational product.

Socialisation by discourse can help legitimise and validate design ideas, similar to a critical literature review delineating a specific research gap in the scientific method. Like the literature review, socialisation by architectural discourse articulates values in a specific context, references past works and critiques, and introduces logic and technical terminology to make evaluative discussion and choices more efficient, clearer, more explicit and 'refutable' to continue the scientific analogy, exploring and even defining performativity in discourses. By articulating the rationale and value of a design, it becomes easier to gain support and acceptance from clients, peers, and regulatory bodies. This socialisation process also enables architects to refine and improve their options based on feedback and constructive criticism and to place this in a historical and constantly evolving process of design knowledge and design values construction/deconstruction.

### ***Why not just craft to adapt form to function?***

Is Architecture an objective activity aimed at functionality? Functional design considerations are an essential aspect of architectural design education, but it is not the only consideration. At any point in time and space, function or structure alone tends to under-determine architecture, however small or large. There is always an excess that requires architectonic configuration. Focusing solely on functionality may lead to designs disregarding aesthetics, cultural-spatial context, and social-spatial implications and transformative potentials. Architecture as a discipline sets, solves and proposes practical problems by articulating into design criteria, the discipline's own

historically and philosophically grown values and the values and critical and ethical aspirations of the societies/communities in which architecture is made. This realm encompasses art, science, technology, engineering and human experience.

Alain Chiaradia

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Paranoiac-critical method:

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#### **Dean's afterword**

Acknowledging Alain's conclusion raises for me another kind of question about AI's impact on architecture and architecture education: will AI and a highly digitised construction industry change the nature of architectural discourse? The massive technological changes of the late Middle Ages led to the architectural discourse of the Renaissance. Electricity led to a completely different architectural discourse in the 20th century compared to the previous century. AI platforms that can help clients, contractors, construction project management teams and the public decompose the stages of design and apply AI differently to each of the five iterating phases of design-thinking (to be reductionist), will force architects to be more specific about the formal and functional dimensions of the discourse they use to generate, articulate and sell a design. AI will force this articulation at each stage (empathising, defining, ideation, prototyping, testing) and during the iterative links between stages. If non-designer clients and professionals can explore form using LookX and similar, might they generate or insist upon their own discourse? Might that discourse become more functional (ironically if AI emphasises imagination and surrealism in creating eye-catching forms)? Will this force architectural discourse to become more popular and will that be good or bad? The discussion will be continued in next DRup by colleague Lidia Ratoi. Many thanks to Alain.

And many thanks also, and congratulations, to colleagues whose works are highlighted below. As always, the breadth and depth of FoA's academic and professional footprint amazes me.




Chris Webster


Dean, FoA

## Faculty of Architecture

### 1. New colleagues

- A warm welcome to the following colleagues, who joined our Faculty in October and November 2023:

	<p>Dr Guan Huang Post-doctoral Fellow Department of Urban Planning and Design</p> <p>Dr Huang obtained his PhD from the University of Hong Kong in 2023. Before that, he completed his Master's and Bachelor's degrees at Wuhan University.</p> <p>His research interests include urban transport studies, transport geography, and spatiotemporal big data analysis. His current research focuses on modelling the benefits, revealing the influencing factors, and understanding the way to prompt ridesharing service through simulation and state-of-the-art methods. The objective of his studies is to prompt the adoption of ridesharing service so that the wasted (idle) vehicle capacity can be fully utilised during the trip to reduce the fleet size, vehicle kilometres travelled, and car emissions. He is currently under the supervision of Professor Anthony Yeh.</p>
	<p>Dr Along Jin Post-doctoral Fellow Department of Urban Planning and Design</p> <p>Dr Jin completed his PhD at the University of Hong Kong in 2023. Prior to that, he received a Master's degree from the University of New Brunswick, and a Bachelor's degree from Nanjing University of Posts and Telecommunications. His research interests include urban computing, smart city, and artificial intelligence.</p>
	<p>Dr Ji Eun Lee Post-doctoral Fellow Department of Urban Planning and Design</p> <p>Dr Lee completed her PhD degree in Urban Planning and Urban Engineering at Yonsei University. She also obtained her Master's and Bachelor's degrees from Yonsei University.</p>

	<p>Before joining the Urban Analytics and Interventions Research Lab of the Faculty, Dr Lee was a post-doctoral research fellow at the National University of Singapore from 2021 to 2023, and an associate research fellow at the Seoul Institute from 2019 to 2021. She is a certified senior survey analyst, urban planning engineer, and transportation engineer in South Korea. Over the course of her career, she has contributed to a total of 20 urban planning-related research projects.</p> <p>Dr Lee's research expertise encompasses urban land-use, housing market dynamics, inequality assessment of urban space, and future simulation of urban spatial structure. Guided by the overarching research question of how to create efficient urban planning for a sustainable future, she employs a data-driven approach to derive urban planning implications from human behaviours. This includes econometric modelling, big data analysis (including natural language processing), and land-use optimisation.</p> <p>Currently, Dr Lee is working under the supervision of Professor Guibo Sun and Dean Chris Webster, conducting research on urban renewal and its health impacts on the elderly population.</p>
	<p>Dr Lan Luo Post-doctoral Fellow Division of Landscape Architecture</p> <p>Dr Luo received her PhD degree from the University of Hong Kong in 2023. Her research on urban environments and residents' health has been published in the <i>Journal of Environmental Psychology</i> and <i>Chinese Landscape Architecture</i>. She has presented at different conferences, symposia and forums, such as the Annual Conference of the Council of Educators in Landscape Architecture (CELA) and the International Association for China Planning (IACP) Conference. She also won the American Society of Landscape Architects (ASLA) Student Award and a summer grant from the Graduate School of Design at Harvard University.</p> <p>Dr Luo's research mainly focuses on the impacts of the environment on human health and deviant behaviour, and virtual reality technology. Under Professor Bin Jiang's supervision, she conducts research on healthy city and carries out healthy community landscape projects at the Urban Environments and Human Health Lab.</p>






Professor Waishan Qiu  
Assistant Professor  
Department of Urban Planning and Design

Professor Qiu obtained his PhD degree in Regional Science from Cornell University in 2022. Previously, he received a Master's degree from MIT in 2017, an MArch degree with distinction from UCL in 2014, and a Bachelor of Engineering degree from Tongji University in 2013.

His previous lab experiences included the MIT Center for Advanced Urbanism, MIT Senseable City Lab, MIT STL Real Estate Entrepreneurship Lab, and Harvard Evidence for Policy Design.

Professor Qiu is an urban researcher and designer. His research utilises spatial analysis, sensing technology, and AI to improve mobility, shareability, and sustainability. He has been involved in various data-driven research and smart city projects across the world in places like Saudi Arabia, the United Arab Emirates, the U.S., and China.

Professor Qiu has actively participated in many publications, lectures, and exhibitions. He has co-instructed design workshops for digital conferences including the CAADRIA 2021-2023 and the Digital Futures 2020. He has co-authored papers and served as a reviewer for top-ranking peer-reviewed journals such as *Landscape and Urban Planning*, *Journal of Transport Geography* and *Cities*. His exhibitions included '3RD VISION' for the 2019 Shenzhen-Hong Kong Bi-City Biennale of Urbanism\Architecture (UABB), Housing+ Biennale 2017 at MIT, and 'the Big Data, Visualization, and Society' (2016). He has also spoken on smart cities and big data topics, for universities and institutions including Harvard Graduate School of Design, Columbia University, Iowa State University, and Chongqing University. He is also an entrepreneur and honouree of Forbes China 30 Under 30 in 2019. He co-founded three startups with a shared focus on urban entrepreneurship, exploring design thinking education, AI-enhanced driving safety systems, and urban development strategies respectively.

	<p>Dr Yawen Wang Post-doctoral Fellow Division of Landscape Architecture</p> <p>Dr Wang received her PhD degree from the JC School of Public Health and Primary Care at the Chinese University of Hong Kong in 2023. Before that, she completed a Master of Public Health degree from the School of Population Medicine and Public Health at the Chinese Academy of Medical Sciences &amp; Peking Union Medical College in 2020, and a Bachelor of Medicine degree from the School of Public Health at Wuhan University in 2017.</p> <p>Dr Wang's research interests include climate change, extreme weather events, health risk analysis, and environmental health. She is currently conducting research on health resilience in the face of compound extreme weather conditions, under the guidance of Professor Chao Ren.</p>
	<p>Dr Tianzuo Wen Post-doctoral Fellow Department of Urban Planning and Design</p> <p>Dr Wen earned his PhD degree from the University of Hong Kong in 2023. Prior to that, he received a Master's degree in Urban and Regional Development from Peking University and a Bachelor's degree in Urban Planning from the South China University of Technology. His research interests include state-market relations, urban governance and financing, public-private partnerships, regional development, and urban climate. Currently, he is conducting research on sustainable urban development strategies, under the supervision of Professor Shenjing He.</p>
	<p>Dr Liupengfei Wu Post-doctoral Fellow Department of Real Estate and Construction</p> <p>Dr Wu received his PhD degree in construction management in 2023 and an MSc degree in construction management (Distinction) in 2018, both from the University of Hong Kong. Before that, he completed his BEng degree in civil and structural engineering (First Class Honours) from the University of Adelaide in 2016.</p> <p>Dr Wu's research interests include construction informatics (BIM, VR/AR, Internet of Things, blockchain, and smart contract), project management, and public</p>

	<p>policies related to digital technologies. His work has appeared in <i>Project Management Journal</i>, <i>American Society of Civil Engineers (ASCE) Journal of Construction Engineering and Management</i>, <i>ASCE Journal of Management in Engineering</i>, <i>Automation in Construction</i>, <i>Computers in Industry</i>, among many other academic journals. He received Bronze Medal in the 48th International Exhibition of Inventions of Geneva 2023, ASCE Best Peer Reviewed Paper Award 2022, Gold Award in the Hong Kong ICT Awards 2022, Innovation Awards in the 12th Guangdong-Hong Kong IoT Award 2022, Sole Winner in the 'Professional Research' category of the buildingSMART International (bSI) Awards 2021, Merit Paper Award in the 25th International Symposium on Advancement of Construction Management and Real Estate 2020. During his post-doctoral fellowship, he will be working on smart construction objects (SCOs) and blockchain smart contracts (BSCs) for innovative architecture, engineering, and construction (AEC) applications, under the supervision of Professor Wilson Lu.</p>
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## 2. Dean Chris Webster

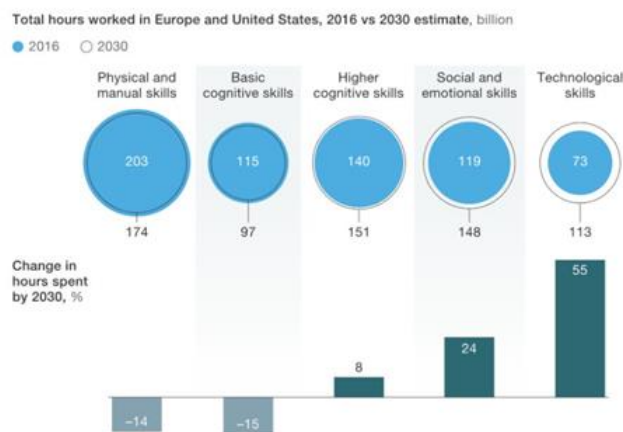
- participated in the University's 'Cookies Giveaway' activity during the exam period, as part of the 'We Share, We Care, We are HKUers' campaign initiated by CEDARS to promote a caring HKU culture among our students.



### 3. Dean Chris Webster and Professor Shenjing He

- were invited to give keynote speeches at the Global Dean's Forum hosted by the College of Architecture and Urban Planning (CAUP) of Tongji University.

Dean Webster's online speech, entitled 'AI, ML, Automation in Architecture and City Planning', was part of the Global Dean's Forum 'Your Skills Are Irreplaceable' hosted by the College of Architecture and Urban Planning (CAUP) of Tongji University, in Qinhua dao city, Hebe Province, on 2 December 2023.



Source: McKinsey Global Institute Workforce Skills Model; McKinsey Global Institute analysis

McKinsey & Company

<https://www.mckinsey.com/featured-insights/future-of-work/skill-shift-automation-and-the-future-of-the-workforce>

Professor He also gave a speech entitled 'Co-creating a Shared Urban Future', at the Global Dean's Forum 'The Future of Built Environment' hosted by CAUP at Tongji University, Shanghai, on 28 November 2023.



#### 4. Martin Cheng (Senior IT Manager)

- achieved Chartered IT Professional (CITP) status with the British Computer Society (BCS), a professional body for Information Technology in the UK. CITP is a professional qualification awarded under Royal Charter to IT professionals who satisfy criteria set by the BCS, providing evidence of an individual's standard of competence and commitment to their profession. It is the benchmark of excellence for IT professionals and is a terminal qualification in the technology industry.

[More Information](#)

## 5. Clarivate Highly Cited Researchers and Top 1% Scholars

- Professor Xiaoling Zhang of the Department of Real Estate and Construction has been named one of the 'Highly Cited Researchers 2023' by Clarivate.



Highly Cited Researchers are selected for their exceptional research performance, determined by production of multiple highly cited papers that rank in the top 1% by citations for field and publication year in Web of Science during 2012-2022.

### [HKU Press Release](#)

In addition, 10 FoA academic colleagues have been ranked by Clarivate Analytics in the top 1% worldwide by citations in at least one of the 22 research fields, with data drawn from Essential Science Indicators (ESI):

Dean Chris Webster	Faculty of Architecture
Professor Bin Jiang	Division of Landscape Architecture
Professor Wilson Lu	Department of Real Estate and Construction
Professor Frank Xue	
Professor Shenjing He	Department of Urban Planning and Design
Professor Xingjian Liu	
Professor Chinmoy Sarkar	
Professor Anthony Yeh	
Professor Xiaohu Zhang	
Professor Jiangping Zhou	

Source: [HKU Scholars Hub](#)

Remarkably, FoA has 18% of its professoriate staff entered this Top 1% Scholars list, ranking the 3rd among HKU's 10 Faculties.

## 6. Professor Anthony Yeh and Professor Frank Xue

- received First Prize of the 2023 Survey and Mapping Science and Technology Award. An award ceremony was held on 9 November 2023 at the inaugural China Surveying and Mapping Geographic Information Congress held in Deqing, Zhejiang.

Presented by the Chinese Society for Geodesy, Photogrammetry, and Cartography (CSGPC), the national accolade is to recognise remarkable contributions to China's surveying and mapping geographical information science, key technological innovations and development, significant promotions of scientific and technological achievements, industrialisation of advanced technology, mega engineering projects, and popularisation of science.

The award-winning project, titled 'Key Digital Technologies and Applications for Cultural Heritage Conservation in the Guangdong-Hong Kong-Macao Greater Bay Area', aims to develop and apply digital technologies that extract the shared cultural 'genes' of Guangdong, Hong Kong, and Macao. The project team is developing a Lingnan cultural gene database by using 3D real scenes, digitisation, and automated creation of BIM models of heritage buildings in the Greater Bay Area. This will enable a cloud service platform for the co-creation, sharing, and demonstration of shared culture and heritage elements of the Guangdong-Hong Kong-Macao Greater Bay Area.

This multi-disciplinary team also featured members from Guangzhou Okay Information Technology Ltd, Guangdong Antique Archaeology Institute, Guangzhou Urban Planning and Design Survey Research Institute, and Sun Yat-Sen University.

The HKU team developed two innovative technologies for the award-winning project. The first innovation was a four-level theoretical automation framework of heritage building information modeling (HBIM) reconstruction guided by architectural grammar, which also received a Merit Paper Award from the CRIOCM2020 international conference. Additionally, the team developed an HBIM automation software in Python language for processing 3D point clouds of heritage buildings, with features like section partitioning, local patch morphological clustering, registration of similar components, and semantic relationship generation. This software is a key technology of the award-winning project and also received an Outstanding Paper Award of CRIOCM2023 international conference. The technologies can be applied to other BIM applications, such as automatic construction of BIM models for existing buildings, if the common components and shape grammar constraints are available.

[HKU Press Release](#)



From 3D color point cloud scan to final Heritage BIM model  
using object-oriented BIM automation method



(From left) Ms Aiwu Xiong, Director of Guangzhou Okay Information Technology;  
Ms Jin Cao, Director of Guangdong Antique Archaeology Institute; Professor Frank  
Xue; Mr Yong Wang, Deputy Director of Guangzhou Okay Information Technology Ltd

## 7. HKU Teaching Excellence Awards 2023

- Professor Kristof Crolla (ARC) and Ms Susanne Trumpf (DLA) received Teaching Innovation Award (Individual Award) for their projects 'Online E-Learning Database for Flipped-Classroom Tutorials on Digital Design Tools & Techniques in Architecture' and 'TAL-L (Taxon-Archive-Lab – Library) – A Materials Archive for Landscape Architecture', respectively. The Selection Panel was deeply impressed with their dedication to teaching, their tireless and creative efforts to make learning enjoyable and challenging, and the impact they have made on student learning.

## 8. Faculty Teaching Awards 2023

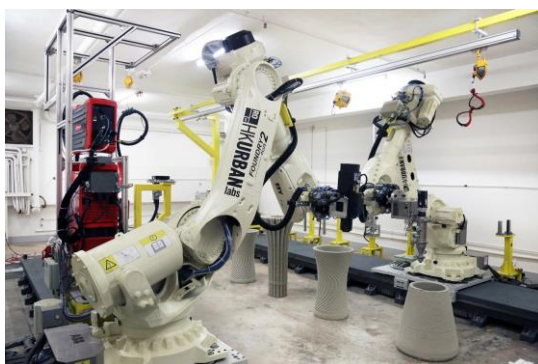
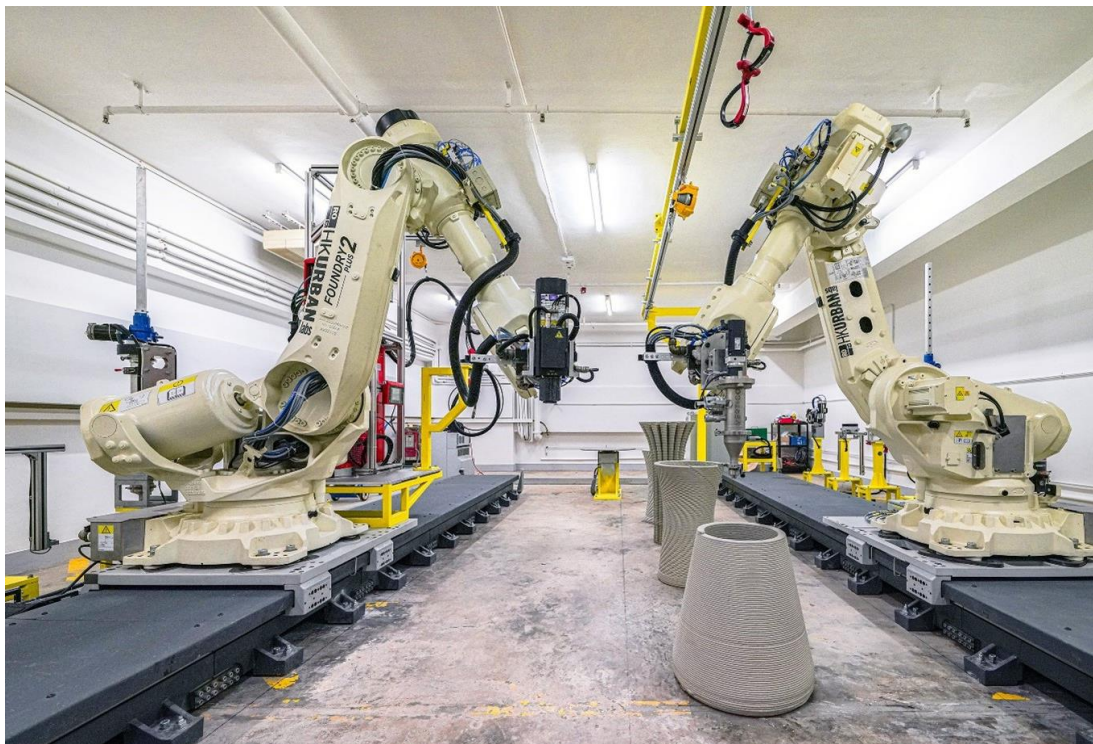
- Professor Guillaume Othenin-Girard (ARC) and Professor Lidia Ratoi (ARC) won the Awards by unanimous decision of the Selection Panel, which was impressed with their dedication in teaching, and their innovative pedagogical approaches to enduring excellence to enhance student learning experiences and learning outcomes.

## 9. Robotic Fabrication Lab

- has undergone a transformative expansion, showcasing cutting-edge advancements in the latest robotic fabrication technology.

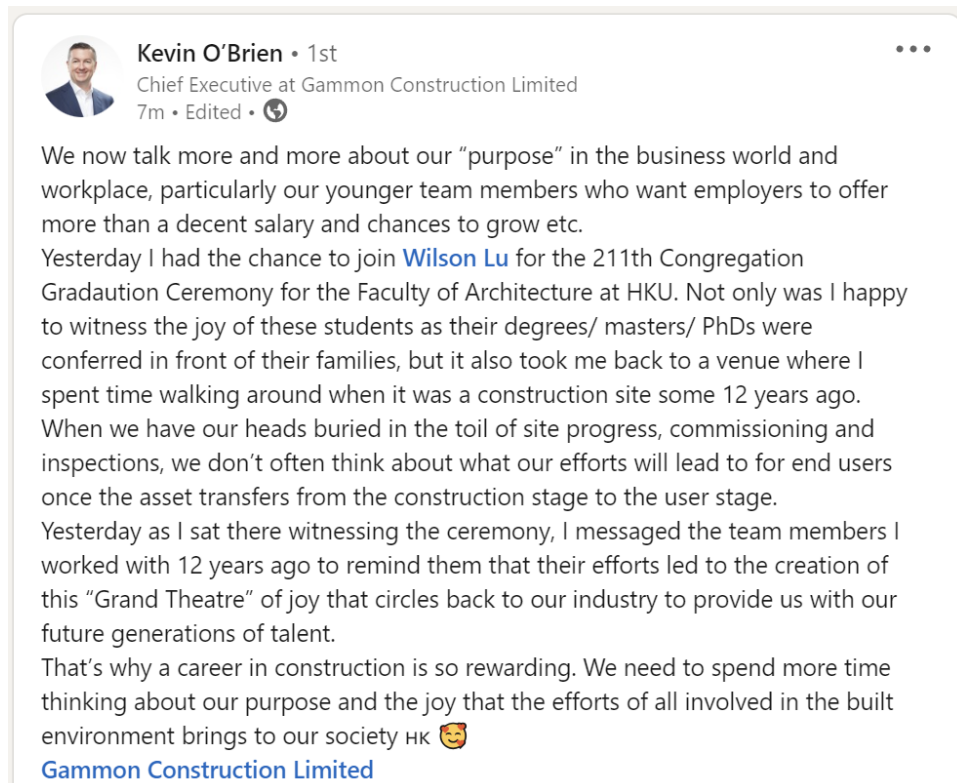
The Lab now proudly houses two large-scale robots mounted on tracks, representing a significant leap forward for the Faculty's research activities in robotic fabrication. These state-of-the-art robots are equipped with diverse end-effectors that can be changed seamlessly and instantaneously, demonstrating remarkable application versatility.

The upgrade of the Lab has been initiated and planned by Professor Christian Lange, Leader of the Robotic Fabrication Lab, together with team members Mr Jacky Chu and Mr Mono Tung. More information can be found on the [Faculty website](#).



## 10.211th Congregation and Diploma and Prize Presentation Ceremony

- was held successfully on 6 December 2023 at the Grand Hall, HKU, with the gracious presence of Mr Kevin O'Brien, Chief Executive of Gammon Construction Limited. Mr O'Brien has also shared his experience at the Congregation on LinkedIn:



## Department of Architecture

### 1. Professor John Lin and Professor Lidia Ratoi

- were featured in the *Financial Times* on 30 October 2023, with their Traditional House of the Future selected as one of [the 15 dreamiest homes on earth \(ft.com\)](https://www.ft.com/content/30-oct-2023/15-dreamiest-homes-on-earth).



**Project abstract:** This prototype house by Professor John Lin and Professor Lidia Ratoi of the University of Hong Kong is part of the Chinese government's rural revitalisation plan for Nanlong Village in Guizhou province, where hundreds of dilapidated wooden houses have been abandoned. The idea is to rejuvenate vernacular houses with modern layouts and amenities using on-site 3D printing and wood craftsmanship. These traditional houses are constructed such that they can be dismantled in a day, so this house was scanned before robotically printed walls were customised to include spaces such as an entrance courtyard, skylight, balcony, kitchen and bathrooms – a template for generating future homes.

### 2. Professor Joshua Bolchover and Ms Jersey Poon

- won Silver Award (Asia Pacific) at the Holcim Awards 2023, for the project Ger Plug-In 3.0, in Ulaanbaatar, Mongolia. It is a housing prototype that upgrades ger (traditional felt tent) dwellings to provide affordable and energy efficient housing with sanitary infrastructure, such as toilet, shower, septic tank and electric heating system. The addition of living and sleeping spaces is further proposed in the design, which improves air quality, health and wellbeing of the occupants.

**Jury appraisal:** The jury particularly appreciated the profound cultural significance embedded in this sustainable design project that merges modern energy-efficient principles with traditional architecture. The project's recognition of the enduring legacy of traditional Mongolian culture, symbolized by the ger and its representation of the people's nomadic origins, deeply impressed the panel. The architects' commitment to preserving cultural heritage while innovatively integrating sustainable features exemplifies a harmonious blend of tradition and progress. The architects' innovation is noteworthy, as they adeptly navigate existing traditional building techniques to create a contemporary solution. This strategy, distinct from merely adopting modern building technologies, successfully eliminates the practice of open coal burning while presenting a contextually fitting and health-conscious housing typology for the local population. By doing so, the project takes into consideration not only the architectural and energy efficiency aspects but also the well-being of the occupants, which was considered a great asset of the project. This careful attention to comfort ensures that the inhabitants can enjoy the benefits of the energy-efficient ger house while experiencing an enhanced quality of life, truly demonstrating the architects' dedication to holistic sustainability.



Photo: Holcim Awards

[More Information](#)

### 3. Professor Fai Au

- won Silver Award in the [DFA Design for Asia Awards 2023](#), under Spatial Design category, for his project Snowland Air Base (by O Studio Architects), located in Zhangjiakou, Hebei Province, China.

[Snowland Air Base](#) is a small private airport, where function has been combined with innovative design. Strategically located on a plateau, its elongated architecture reflects the delicate horizon line, and symbolises a dance between the earth and the sky. The many private jets there are parked in triangular sections, each one tilted, so that the functional zones can easily be distinguished, and the open plan design, and light, airy structure facilitate smooth movement, while the use of triple-glazed glass maximises the natural light and offers breathtaking views of the mountains.



#### 4. Professor Kristof Crolla, Professor Christian Lange and Mr Mono Tung

- received the HKSAR Government's Secretary for Housing, FoA alumna Ms Winnie Ho Wing-yin [BA(AS) 1986, BArch 1988, PDipCPM 1995], and her team of architects from the Housing Department, on 4 January 2024. We hosted an engaging and stimulating discussion on how AI technology could facilitate the redevelopment design of aging public housing estates, as MArch students Kinson Law, Kelly Pun, Hanna Shao, Tian Sheng and June Zhu presented their studio projects about Choi Hung and Choi Wan Estates.

Read about the student projects in Mono's article on [Mingpao Daily](#).



Secretary Ho's related [Facebook post](#) on her visit.

## 5. HKU Architecture Gallery @PMQ

- returned in November 2023 and has since held three exhibitions curated by our teachers and students:



### 'Islands Lighter Than Water: Field Studies of Nisyros and Gyalí'

11-26 November 2023

[More Information](#)



### 'Autobryksformation: Towards a New Approach to Brick Expressionism | Methods for Unique Idiosyncrasies in Architectural Material Systems | A Practice in the Making'

21 December 2023 – 11 January 2024

[More Information](#)



### 'KATENARA: Advanced Computational Methods for Low-Tech Timber Construction'

19 January – 16 February 2024

[More Information](#)

## Division of Landscape Architecture

### 1. Ms Vincci Mak

- and her team curated the exhibition, 'Village Commoning: Developing a Community-led Model in Countryside Revitalisation', on 9 September – 2 October 2023.



Established in 2021, the research initiative is funded by the Countryside Conservation Funding Scheme of the Hong Kong SAR Government. The research team seeks to derive a community-led model of village revitalisation that enables local stakeholders to take a greater role in initiating revitalisation of their village assets. Utilising 'commoning' as a conceptual framework, this model emphasises cooperative governance and the collective management of resources that can lead to the creation of new values, fostering a sense of pride and ownership of place by empowering the community as a whole.

This exhibition shared our understanding of commons and commoning and disseminated our research findings.



The Exhibition had two satellite events:

- 23 September 2023: villagers from Po Toi Island, So Lo Pun Village, and Yung Shue Au Village joined the team for a sharing session, which aimed to gain a deeper understanding of how villagers approached village revitalisation by taking into account their common goals, shared resources, and stakeholders; and to learn more about their needs and the challenges they have faced.





- 30 September 2023: enthusiastic members of the public from various disciplines gathered at the exhibition venue to participate in the Co-creation Workshop. This event was not only an opportunity to experience commoning but also an endeavour to create a shared commons. After gaining insight into the needs of villagers, participants proposed ideas to foster collaboration among village communities and stakeholders.



More information:

- Website: <https://villagecommoning.hku.hk>
- Facebook: <https://facebook.com/villagecommoninghk>
- Instagram: <https://www.instagram.com/villagecommoninghk>

## 2. Professor Binley Chen

- received funding under the National Natural Science Foundation of China and the Research Grants Council (NSFC/RGC) 2023/24 Exercise, for his project '[Advancing Pollen-induced Health Risk Assessment with Geospatial Big Data](#)'.

[HKU Press Release](#)

## 3. Professor Chao Ren

- has received Merit Award of the Green Building Award 2023 (GBA 2023) under the Research and Planning Category: Research, for her Research Impact Fund project titled 'Increasing the Resilience to the Health Impacts of Extreme Weather on Elderly People under Future Climate Change'.

Her other research project, titled 'Monitoring and Assessing the Built-up Environment for Sustainable Urban Development', has also been selected as a finalist under the same category.

The biennial Green Building Award has been jointly organised by the Hong Kong Green Building Council (HKGBC) and the Professional Green Building Council (PGBC) since 2010. The Award aims to recognise building-related projects and organisations with outstanding performances and contributions towards a sustainable built environment and encourage the wider adoption of sustainable planning, design, construction, management, operation, maintenance, renovation and decommissioning of buildings.

The GBA 2023 covers five categories: New Buildings (NB), Existing Buildings (EB), Research and Planning (RP), Building Products and Technologies (BPT) and Green Building Leadership (GBL).

For the announcement of Award winners, please click [HERE](#).

- shared her views on the worsening extreme weather condition in Hong Kong, as part of her research in collaboration with CUHK and HKUST.

Selected media coverage:

- [Study: Hong Kong to witness more hot days, heavier rainfall \[China Daily Hong Kong Edition\] 2023-11-28](#)
- [Call to set up weather task force \[South China Morning Post\] 2023-11-28](#)
- [More extreme rainfall on long-term radar \[The Standard\] 2023-11-28](#)
- [研究：20年後極端暴雨量料增四成 學者促早定對策「勿用過去規劃將來」 \[Ming Pao Daily News\] 2023-11-28](#)
- [熱夜料多五成 最長連續 15 天 北都或重災區 \[Ming Pao Daily News\] 2023-11-28](#)
- [20 年後熱夜飆升五成 超級黑雨常見 \[HKTKWW\] 2023-11-28](#)
- [專家推算 20 年後極端天氣更頻繁 暴雨量超 9 月黑雨紀錄四成 \[am730\] 2023-11-28](#)

## Department of Real Estate and Construction

### 1. Professor Wilson Lu

- was invited to speak alongside the Provost, Professor Richard Wong, and the Associate Vice President (AVP), Professor Lin Chen, on 27 October 2023. The session on the theme of Higher Education Model in Hong Kong's Education was part of the Leadership Training Series 2023 for HKU Academic Department Heads. Professor Lu's presentation was titled 'The Sky is NOT the Limit in Laissez-faire Hong Kong'.



- was invited to give a keynote speech, titled 'Building Information Modelling (BIM) and Digital Twins (DT) for construction occupational health and safety', at the Annual Conference organised by the Occupational Safety and Health (OSH) Branch of the HKSAR Government's Labour Department, on 11 October 2023. The iconic annual event was officiated by the Commissioner of Labour Department. Professor Lu received an appreciation letter from the Branch, which commended his participation and adding immense value to the Conference. BIM and DT are smart technologies enthusiastically pursued as a strategy to respond to the many OHS tragedies in the construction sector recently.



## 2. Professor H. F. Leung

- moderated the session of 'User's Perspectives on Security of Payment Provisions' in the Hong Kong Institute of Construction Adjudicators (HKICAdj) Adjudication Conference 2023, on 19 September 2023.



## 3. Professor Xiaoling Zhang

- chaired a forum titled 'International Cooperation for Urban Sustainable Development Goals (SDGs) in the Post-pandemic Era', at the [3rd SDG Cities Global Conference](#) in Shanghai, on 28 – 30 October 2023. The Conference, co-hosted by the United Nations Human Settlements Programme (UN-Habitat), the Ministry of Housing and Urban-Rural Development of the People's Republic of China, and the Shanghai Municipal People's Government with support from Tongji University, was part of the 2023 World Cities Day Observance.

During the Conference, Professor Zhang delivered a keynote speech on 'Addressing Urban Sustainability science trilemma: goals, pathway and opportunities', emphasising that 'we need to dissolve the distinctions and trade-offs among eco-centric, anthropocentric and complex ecosystem network approaches towards sustainability from the perspectives of dynamic, relational and multi-dimensional, encompassing all four of the social, economic, ecological and governance spheres, and across scales.'



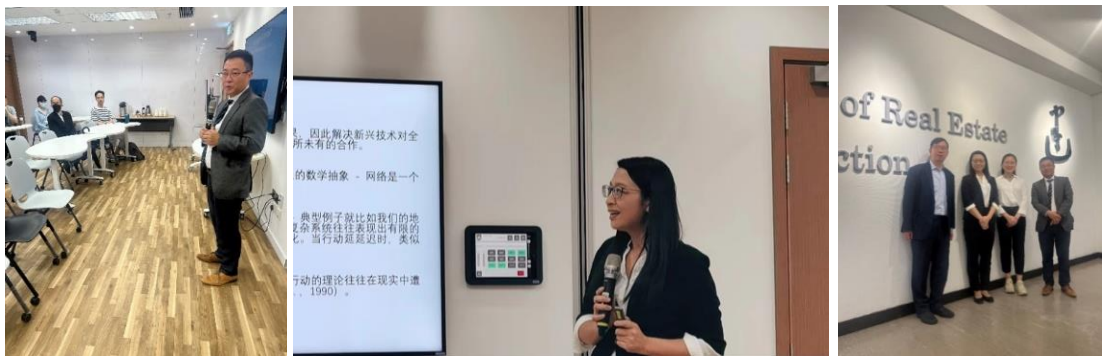
One of the significant outcomes of the Conference was the signing of an MoU between the Sustainable Development Goals (SDGs) Big Data International Research Center and UN-Habitat. The MoU established a long-term strategic partnership aimed at strengthening the monitoring of urban-centred SDGs, New Urban Agenda, and Global Urban Monitoring Framework. The collaboration will

leverage data science, technology, and innovation to support the inclusive, safe, resilient, and sustainable development of cities and human settlements.

- organised and led a forum titled 'Digital Economy and Carbon Neutrality', on 20 October 2023. The event was jointly hosted by the Department of Real Estate and Construction (REC), Faculty of Architecture, and the Institute for Climate and Carbon Neutrality of The University of Hong Kong. It began with a warm welcome from Professor Chen Lin, Chair of Finance at the HKU Business School and Associate Vice-President of HKU, and Professor Wilson Lu, Chair Professor and Head of REC.

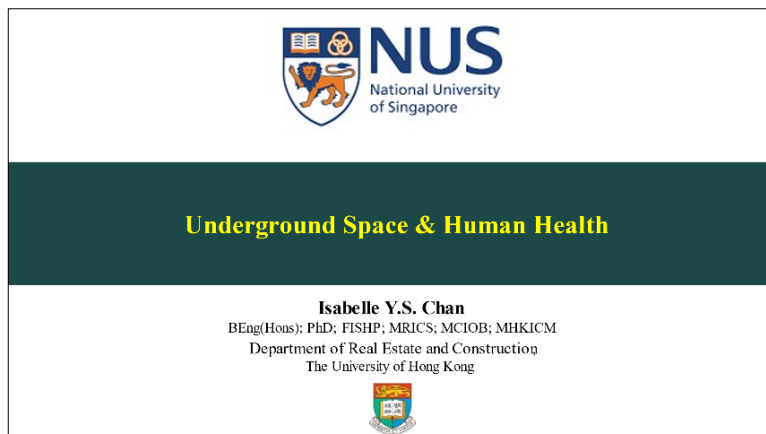
Professor Xiaoling Zhang delivered a speech on 'Meta Carbon Platform: Scope 3 Carbon Emission Accounting', highlighting the significance of effectively tracking, accounting for, and optimising 'Scope 3' carbon emissions across the entire industry value chain in Hong Kong.

Other speakers included Fang Wang representing the Open Research Institute of Ant Group, and Dr Yanhui Wu from the Institute of Digital Economy and Innovation of the HKU Business School.

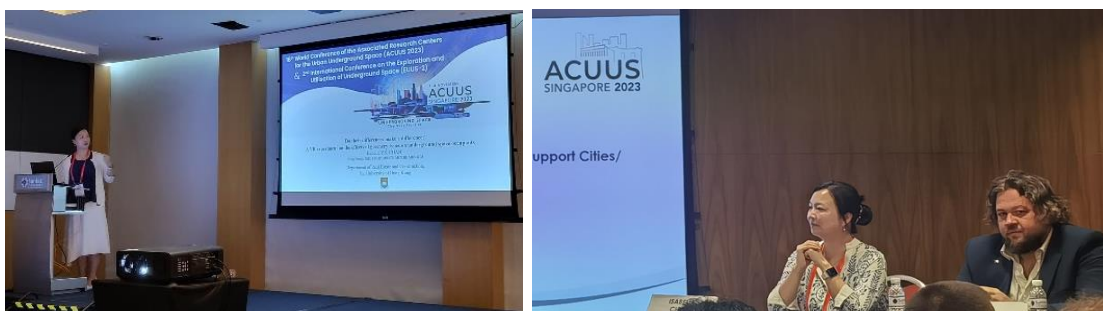


#### 4. Professor Isabelle Chan

- was invited by the Department of Real Estate, NUS Business School, National University of Singapore, to deliver a research seminar on 'Underground Space & Human Health', on 31 October 2023.



- chaired a session and presented in the 18th Conference of the Associated Research Centers for the Urban Underground Space (ACUUS): Underground Space – The Next Frontier, in Singapore on 1 November 2023. The international conference hosted over 300 delegates from all over the world.



- served as one of the speakers in the RICS Hong Kong Conference – Build a Future for Integration and Common Prosperity, organised by RICS on 7 November 2023. The topic was ‘Dialogue: Challenges and Success – Talent Retention and the Next Generation Thriving’.



## 5. Professor K. W. Chau and Professor Isabelle Chan

- were invited by the RICS to join the 2023 RICS Hong Kong Policy Address Recommendation Taskforce. The Recommendation Paper was presented in September 2023.



## 6. Professor Kasing Yu

- served as one of the panel speakers at the screening event and sharing session of the documentary 'Mount Davis: From Citadel to Campus', held jointly by the University of Chicago and the Jao Tsung-I Academy, on 11 September 2023. In the sharing session, Ar Yu and other speakers led the audience through the journey of transforming a vacant Grade III historic site into a revitalised heritage and a modern campus.



### [More event details](#)

- was interviewed by the Youtube channel 'Mill Milk' in the episode about Hong Kong Island's slopes and steps. There, Ar Yu shared his findings on the cityscapes in Central and Sheung Wan, which were developed in response to the steep contours around. The video has received 325K views since its launch in October 2023. Watch the interview on [YouTube](#).
- was interviewed by RTHK's documentary programme 'Hong Kong United', in the episode of '漫遊築覺—摩星嶺域多利道活化校園建築特色' (Strolling through Historic Buildings – University of Chicago Heritage Interpretation Centre), in which he introduced the design and history of the University of Chicago Heritage Interpretation Centre in Mount Davis, formerly known as the 'White House'.



The interview came out on 16 November 2023 and is available [online](#).

## 7. Professor Lawrence Lai and Professor Kasing Yu

- were interviewed by TVB's documentary programme 'A Closer Look' (時事多面睇), on the possibility of turning existing war relics in Hong Kong into outdoor museums.



[Watch the Interview](#)

## 8. Professor Jin Zhu

- co-authored a book titled 'Metropolitan Countryside: The Path of Rural Transition in Shanghai', with Dr Jinwei Hao of Shanghai University.

Published by Shanghai People's Publishing House, the book systematically analyses the challenges of rural development in the context of rapid urbanisation in Shanghai's city-region. It focuses on the new characteristics of rural areas, such as changing urban-rural linkages, linked migration, and rural gentrification. The book has been selected by the Shanghai Municipal Government as an important think-tank report.



More information: <https://www.bookschina.com/9233100.htm>

## 9. BSc(Surveying) students

- paid a visit to Kodak House II, a non-revitalised industrial building, on 12 September 2023, as part of the course RECO 3036 'Studio 5 - Adaptive Reuse and Facilities Management'. The visit allowed the students to compare and contrast between revitalised and non-revitalised buildings, and to have a good grasp of strategic facilities management planning in revitalisation projects.



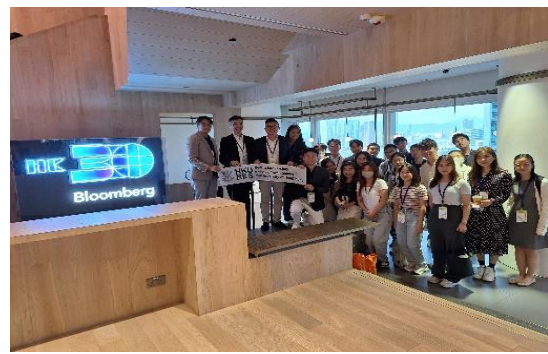
## 10. BA(Conservation) Year 4 students

- were given the support to attend a cultural mapping field study in Penang, in line with the University's commitment to cultivating internationalism by way of encouraging overseas learning experience of undergraduate students. The field study was guided by Janet Pillai, chair of Arts-ED, a non-profit organisation working on community area revitalisation projects in partnership or consultation with professionals, local agencies and community. Apart from understanding the opportunities and constraints faced by tangible heritages, the students also gained first-hand experience as artisans of one of the living intangible heritages of Georgetown, through their participation in a half-day rattan weaving workshop with the 4th generation owner of Seang Hin Leong.



## 11. Guided site visits to labs and companies

- Our teachers and students had an incredible experience in a series of lab and company guided tours arranged by the Department and its affiliated student society, including tours to Bloomberg, Standard Chartered Bank, Colliers, South Asia Commercial Centre, Link Sustainability Lab, Geospatial Lab, HKU Wong Chuk Hang Student Residence Project, etc. They attended presentations by industry leaders, took part in office tours and networking opportunities.



## 12. MSc(RE) Executive Talk Series

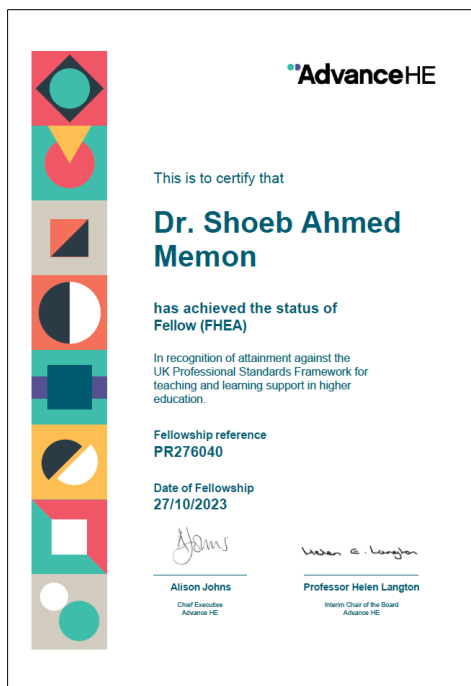
- invited Mr Nick Tang, CEO of Wang On Properties, and Ms Joelin Ma, Director of APG Asset Management Asia, to discuss the challenges of urban rejuvenation development in Hong Kong, on 6 October 2023. A joint venture has been established by the two companies in 2021 to acquire residential properties in Hong Kong for sustainable development and urban regeneration.

Mr Tang and Ms Ma shared their insights on the subject of a live case competition – 101 and 111 King's Road, Fortress Hill. Their talk provided valuable knowledge and deepened our understanding of sustainable development and urban regeneration strategies. It was truly inspiring to learn about some of the innovative approaches to foster community engagement and promote a sustainable future.



### 13. Dr Shoeb Memon

- has achieved the status of Fellow of Advance HE (FHEA) in recognition of attainment against the UK Professional Standards Framework for teaching and learning support in higher education, through TaLiC HKU. The Advance HE Fellowship is a prestigious recognition celebrating educators and leaders dedicated to advancing teaching and learning practices in higher education institutions worldwide.



## Department of Urban Planning and Design

### 1. MUA and BA(US) students and graduates

- won the Champion, 1st Runner Up and 2nd Runner Up in the Open Category of the [Common Spatial Data Infrastructure \(CSDI\) Awards](#) organised by the Geospatial Lab of the Development Bureau.

This year's theme of the Awards is 'Environmental, Social and Governance' ('ESG'). The Awards encourages the creative use of spatial data from the CSDI portal to deal with challenges related to ESG issues, making Hong Kong a livable, smart and innovative city. There were nearly 40 teams from universities, firms, and the public participating in the Open Category of the competition. Apart from winning all the top prizes, three other teams also won the merit awards.

The Champion received a cash award of HK\$60,000, 1st Runner-Up HK\$50,000, 2nd Runner-Up HK\$40,000, Merit Award HK\$10,000, and Special Award HK\$2,000 each. The awards were presented by Ms Doris Ho, Permanent Secretary for Development (Planning and Lands), on 30 July 2023 at the Hong Kong Productivity Council Building. The winning teams and their awards are as follows, and are posted on the [official website](#).

Project Titles	Members	Awards
To BAND or to BAN - Envisioning Street Performance Scenes in Hong Kong	<b>MUA (2023)</b> CHAN Pik Ki LIU Ka Yee TSE Calvin WONG Yik Tsun, Queeny YEUNG Ka Lai YIU Chun Kit	<ul style="list-style-type: none"> <li>• Champion</li> <li>• The Most Creative Idea Award</li> <li>• The Best Presentation Award</li> <li>• The Best Fit-to-Theme Award</li> <li>• The Most-Liked Award</li> </ul>
Urban EYE - GeoAI-based and Data-Driven Urban Redevelopment	<b>MUA (2022)</b> NG Chun Hin, Issac	<ul style="list-style-type: none"> <li>• 1st Runner Up</li> <li>• The Best Use of Spatial Data Award</li> <li>• The Best Fit-to-Theme Award</li> <li>• The Most-Liked Award</li> </ul>
BrickThrough HK	<b>BA(US) 2020, MUA 2022</b> CHUNG Wun Wai, Andy  <b>BA(US) 2021</b> NG Yan Lam, Olivia  <b>non-HKU</b> CHAN Hoi Kiu, Venus WU Lok Ting, Jason	<ul style="list-style-type: none"> <li>• 2<sup>nd</sup> Runner Up</li> </ul>

Bringing More Outdoor Event Places to Hong Kong	<b>MUA (2023)</b> HUANG Ruocheng MAO Lu CHEN Zhifei HUANG Yuhui QIN Rujing HU Yazhen	<ul style="list-style-type: none"> <li>• Merit</li> </ul>
Bring SIM City to Real Life to Solve ESG Problems	<b>BA(US) (Year 3)</b> CHEUNG Yuk Yuet POON Ka Yiu WONG Man Hui YEUNG Yeuk Tung YUEN Chit To	<ul style="list-style-type: none"> <li>• Merit</li> </ul>
HKUrbanist - HK GREEN METAWORLD	<b>BA(US) (Year 2)</b> HUANG Xinyi Joyce KUANG Yi Lily LIANG Shizheng Laurence	<ul style="list-style-type: none"> <li>• Merit</li> <li>• The Best Fit-to-Theme Award</li> </ul>



HKU DUPAD Winning Students and Graduates with their teachers, Professor Anthony Yeh, Dr Kenneth Tang, Dr Kam Shing Leung, and Professor Xiaohu Zhang



Champion, the Most Creative Idea Award, the Best Presentation Award, the Best Fit-to-Theme Award, and the Most-Liked Award – To BAND or to BAN – Envisioning Street Performance Scenes in Hong Kong by (from left) CHAN Pik Ki, LIU Ka Yee, TSE Calvin, WONG Yik Tsun, Queeny, YEUNG Ka Lai, and YIU Chun Kit (MUA 2023)



1st Runner Up, the Best Use of Spatial Data Award, the Best Fit-to-Theme Award, and the Most-Liked Award – Urban EYE – GeoAI-based and Data-Driven Urban Redevelopment by NG Chun Hin, Issac (MUA 2022)



2nd Runner Up – BrickThrough HK by (from left) WU Lok Ting, Jason (non-HKU), CHUNG Wun Wai, Andy (BAUS 2020, MUA 2022), NG Yan Lam, Olivia (BA(US) 2021), and CHAN Hoi Kiu, Venus (non-HKU)



Merit – Bringing More Outdoor Event Places to Hong Kong by (from left) HUANG Ruocheng, MAO Lu, CHEN Zhifei, HUANG Yuhui, QIN Rujing, and HU Yazhen (MUA 2023)



Merit – Bring SIM City to Real Life to Solve ESG Problems by (from left) WONG Man Hui, YEUNG Yeuk Tung, POON Ka Yiu, CHEUNG Yuk Yuet, and YUEN Chit To (BA(US) Year 3)

## 2. BA(US) students

- won the GeoLab Quiz Competition (Tertiary Institute Category), organised by the GeoLab and Development Bureau of the HKSAR Government on 16 December 2023. The Champion team led by Dr Kenneth Tang comprised five BA(US) Year 4 students: Cheung Yuk Yuet, Lai Sheung Lun, Leung Chi Fung, Mak Ngar Kei, and Poon Ka Yiu.



The Champion Team (from left) – Lai Sheung Lun, Poon Ka Yiu, Cheung Yuk Yuet, Dr Kenneth Tang, Leung Chi Fung, and Mak Ngar Kei

## 3. Professor Jiangping Zhou and Mr Roger Tang

- guided a group of MSc Urban Planning Year 2 students to organise a Strategic and Community Planning Workshop on 18 November 2023 at the City Gallery, with the support of the Hong Kong Institute of Planners and Planning Department, to explore the opportunity of co-hosting the World Expo by Hong Kong and Shenzhen in 2035.



The event was well attended and represented by participants from diverse backgrounds, including from the Legislative Council, Liaison Office of the Central People's Government in the HKSAR, professional institutes, academia, government offices, business sector and interested groups. The Workshop earmarked the finale of a series of research and engagement activities conducted locally as well as a field trip/seminar in Shenzhen with the China Academy of Urban Planning and Design (Shenzhen). The project findings will be exhibited at the Shenzhen Urban Planning Exhibition Hall in the New Year.

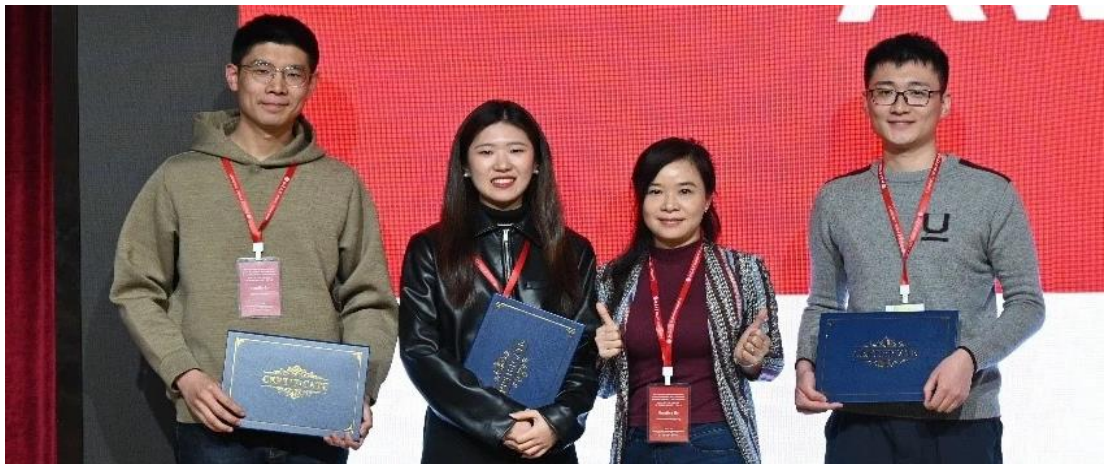


#### 4. DUPAD faculty members and students

- co-organised the 2023 International Forum on Future Urban Development and Urban China Research Network (UCRN) Conference. The Conference was hosted at Peking University, on 28-29 October 2023, with the theme of 'Livable Cities for All: Re-imaging Urban China Research'.

In her capacity of Head of the Department as well Co-Chair of UCRN, Professor Shenjing He gave an opening remark at the Conference. She also spoke at the publication workshop, and served as a discussant for a special session on State Entrepreneurialism.

Our PhD student, Ms Lingkun Meng, received the runner-up prize of the Best Doctoral Student Paper Award sponsored by the [Urban Studies](#) journal, for her paper titled 'Changes in Residential Preferences of Chinese Urban Residents during the COVID-19 Pandemic: A Discrete Choice Experiment'.



Professor Shenjing He presenting the Best Doctoral Student Paper Award to the winners

Other faculty members and PhD students also presented their works at the Conference:

- Professor Jin ZHU: 'Conflict and Compromise in Planning Decision-Making: How does a Chinese Local Government Negotiate its Construction Land Quota with Higher-level Governments?'
- Professor Cui GUO: 'Long-term Exposure to Ambient Air Pollution and Chemical Components on the Prevalence of Stroke: A Case-control Study in Taiwan'
- Ms Luyun ZHAO: 'Planning Decentralised Battery Swapping Facilities for E-bike Sharing Systems'
- Mr Lu SHAN: 'The Making of Medical Superblocks in Urban China: Urban Restructuring around Major Hospitals'
- Ms Chenxi LI: 'Too Privileged to Move? Neighbourhood Perception and Relocation Intention in China's Gated Communities'

- Dr Jinshuo WANG: ‘Competing for Windfalls: Challenges to Coordinating Public Actors in Capturing Land Value for Metro Development in Chengdu, China’



Group photos of UCRN 2023 attendees

## 5. DUPAD faculty members

- hosted the second annual Guangdong-Hong Kong-Macao Greater Bay Area (GBA) Development and Planning Forum, jointly organised with the GBA Planning Alliance (GBAPA) and Hong Kong Institute of Planners (HKIP) at HKU on 10 December 2023. The morning session was punctuated by enlightening addresses from seasoned planning experts of the GBA: Professor Anthony Yeh reflected on the GBA's evolution, guided by his vision of co-creating a smart, habitable and sustainable GBA; Professor Shenjing He introduced her research agenda on the social infrastructure for equity and wellbeing in the GBA context. The afternoon session provided a platform for the new generation of planners to spark thought-provoking dialogues: Professor Tianren Yang examined the concept of urban systems thinking for GBA planning and its potential implications for the GBA's future. The contributions from young planners were met with perceptive feedback from the planning experts. The forum's success was marked by its facilitation of meaningful interaction between established professionals and emerging academics from the GBA, fostering in-depth discourse on regional collaboration across people, industries, and spaces, and reinforcing the pivotal involvement of DUPAD and HKU in the ongoing development of the GBA.



6. Professor Shenjing He, Dr Jiali Zhou, and PhD students Ms Tingting Li, Ms Yun Han, Ms Lingkun Meng, Mr Hanxi Ma, Ms Yao Du and Ms Yuebing Liang

- attended the Association of Collegiate Schools of Planning (ACSP) Annual Conference 2023, in Chicago, Illinois, USA, on 19-21 October 2023.

Professor Shenjing He chaired two sessions at the Conference:

- Roundtable: Planning for the Worlds in Between; and
- Session 6.6: Housing and Crisis

Dr Jiali Zhou chaired two sessions at the Conference:

- Session 14.2: Examining Access to Jobs, Retail, and the City; and
- Session 14.18: Travel and Well-being of Older Adults

Faculty members and students from DUPAD also presented their works at the Conference, including:

- Exploring complex and diverse activity patterns of subway riders in the new era: a case study in wuhan using smart card data  
Authors: LI, Tingting (presenting author); ZHOU, Jiangping
- Role of built environment on knowledge creation: a investigation based on the influential path through the work intensity and social capital  
Authors: HAN, Yun (presenting author); ZHANG, Xiaohu
- Negotiating the exclusive right to public schools in china's education-featured gated communities under multiscalar and multidirectional entrepreneurial urbanism  
Author: HE, Shenjing
- Changes in residential preferences of Chinese urban residents during the covid-19 pandemic: a choice-based conjoint analysis survey  
Authors: MENG, Lingkun (presenting author); YANG, Tianren

- People moving between the airport and city: ground access via public transit  
Authors: MA, Hanxi (presenting author); ZHOU, Jiangping
- Causal pathways to subjective wellbeing: a natural experiment study of social, psychological, and environmental mediators in public transport use among older people  
Authors: DU, Yao (presenting author); SUN, Guibo
- Age-friendly public transport: evidence from travel behaviours of older adults in Hong Kong's metro stations  
Authors: LEI, Shuyu; ZHOU, Jiangping; ZHOU, Jiali (presenting author)



DUPAD attendees of ACSP 2023 (from left): Mr Hanxi Ma, Ms Yao Du, Ms Lingkun Meng, Ms Yuebing Liang, Professor Shenjing He, Ms Yun Han, Ms Tingting Li, and Dr Jiali Zhou

## 7. Professor Shenjing He

- was invited to join as a panellist at the Social Innovation Regional Forum 2023 (SIRF2023) main forum on 8 December 2023. The event attracted 22,000 participants joining physically and virtually, and received extensive coverage from local media, including HK01, Sing Tao Daily, and Hong Kong Commercial Daily. Please refer to this [website](#) for further details.





- was invited to give a keynote speech entitled 'Infrastructural City-Regionalism: Cross-border Healthcare Utilization and Mobilities in the Greater Bay Area' at the Regional Studies Association China Division 2023 Annual Conference in Zhuhai on 2-3 December 2023.



- was invited to present a paper entitled 'Navigating Cross-Border Healthcare: Utilization and Mobility in the Greater Bay Area, China', at the China Consortium Meeting organised by the University of Sydney China Studies Centre on 4-5 December 2023.



### International Consortium on Contemporary China Studies

Organised by the University of Sydney China Studies Centre

**Date:** 4-5 December 2023

**Location:** China Studies Centre, Level 7 Jane Foss Russell Building, 156 City Road, Darlington Campus ([Map](#))

- was elected as a Member of the Supervisory Board of Hong Kong Housing Society (HKHS) 2023/24, for a term of three years.

### [Press Release](#)

<p><b><u>Chairman</u></b></p> <p>1. Mr Walter Chan Kar-lok <i>SBS, JP</i></p>	<p><b><u>Ex Officio Member</u></b></p> <p>21. Miss Rosanna Law Shuk-pui <i>JP</i> (<i>Permanent Secretary for Housing cum Director of Housing, HKSAR Government</i>)</p> <p>22. Mr Andrew Lai Chi-wah <i>JP</i> (<i>Director of Lands, HKSAR Government</i>)</p> <p>23. Mr Ivan Chung Man-kit <i>JP</i> (<i>Director of Planning, HKSAR Government</i>)</p> <p>24. Ms Clarice Yu Po-mei <i>JP</i> (<i>Director of Buildings, HKSAR Government</i>)</p>
<p><b><u>Vice-Chairman</u></b></p> <p>2. Prof Ling Kar-kan <i>SBS</i></p>	<p><b><u>Chief Executive Officer and Executive Director, HKHS</u></b></p> <p>25. Mr James Chan Yum-min</p>
<p><b><u>Elected Member</u></b></p> <p>3. Dr Chan Ka-kui <i>GBS, JP</i></p> <p>4. Mr Desmond Chan Kwok-kit</p> <p>5. Ir Conrad Fung Kwok-keung <sup>N1</sup></p> <p>6. Prof He Shenjing <sup>N2</sup></p> <p>7. Ir Edgar Kwan Chi-ping <i>BBS, JP</i></p> <p>8. Dr Lam Ching-choi <i>SBS, JP</i></p> <p>9. Mr Francis Lam Ka-fai <sup>N2</sup></p> <p>10. Mr Wallace Lam Wing-ted</p> <p>11. Sr Serena Lau Sze-wan <i>MH, JP</i> <sup>N1</sup></p> <p>12. Mr Timothy Ma Kam-wah <i>MH, JP</i> <sup>N1</sup></p> <p>13. Mrs Agnes Mak Tang Pik-yee <i>MH, JP</i></p> <p>14. Mr Alvin Mak Wing-sum</p> <p>15. Dr Isaac Ng Ka-chui <sup>N1</sup></p> <p>16. Sr Kenneth Pang Tsan-wing <i>SBS</i></p> <p>17. Sr Prof Wong Bay</p> <p>18. Mr Wilfred Wong Kam-pui <i>BBS, JP</i> <sup>N2</sup></p> <p>19. Ms Theresa Yeung Wing-shan</p> <p>20. Mr Robert Young Man-kim <sup>N2</sup></p>	<p><sup>N1</sup> Re-elected member</p> <p><sup>N2</sup> Newly elected member</p>

- was invited to join the International Advisory Committee of the *International Journal of Housing Policy*.



## 8. Professor Anthony Yeh

- has been awarded Honorary Fellow of the Hong Kong Institute of Surveyors (HKIS) in recognition of his contributions to the advancement of GIS and smart city development in Hong Kong. He has been regarded as the father of GIS in Hong Kong, introducing the application, teaching and research of GIS to Hong Kong in its early days of inception in the early 1980s. The Honorary Fellowship presentation ceremony was held at the HKIS Annual Dinner on 20 November 2023.



Professor Anthony Yeh (right) receiving the Honorary Fellow Certificate from the HKIS President, Sr Paul Wong Kwok Leung, in the HKIS Annual Dinner

## 9. Professor Tianren Yang

- received the Best Research Presentation Award (1<sup>st</sup> place) at the 8<sup>th</sup> International Conference on Integrated Land Use Transport Modeling.

## 10. Miss Hung Tung Yan (MUP student)

- won the Royal Town Planning Institute Book Prize 2022-23. The Prize is donated by the Royal Town Planning Institute (RTPI) and has been awarded annually since the academic year 1987-88.

## 11. Professor Alain Chiaradia and Mr Siddharth Khakhar

- collaborate with Dr Lingzhu Zhang from Tongji CAUPD, on an innovative project titled 'MorphoMatrix', which redefines the way urban design and planning is approached. This 3D web-based visualisation platform aims to enhance stakeholder engagement in communicative urban design and planning with a successful case study in Sha Tin Volumetric New Town.



[www.morphomatrix.com.hk](http://www.morphomatrix.com.hk)

### Milestones and Achievements

**1. Securing the competitive Cyberport Creative Micro Fund (CCMF) in December 2023:** Led by Siddharth, MorphoMatrix has successfully secured financial support and a comprehensive nurturing scheme from Cyberport's CCMF, a programme that sponsors high-potential digital tech projects and early-stage start-ups in their pre-incubation stage.

**2. Winning the CSDI 2023 Spatial Data Merit Award:** In June 2023, the team launched a functional proof of the conceptual version of MorphoMatrix, which won the HKSAR Development Bureau driven CSDI 2023 Spatial Data Merit Award for Environmental, Social, and Governance (ESG), recognising MorphoMatrix's creative use of 3D spatial data.

**3. Preparing for the CSDI City Management Industry Roadshow in December 2023:** MorphoMatrix is gearing up for invited roadshow presentations to secure project partnerships, collaborations, and investments with government bodies, consultants, developers, and communities, expanding the platform's capabilities for project visioning, validation, and informed decision-making in design and planning processes.

#### Background and Development

The project is funded by the Wong Chan Wah Research Fund for New Town, Research Grants Council, FoA, and DUPAD's Research Project on Future New Town of Asia. The project leader, Professor Alain Chiaradia, aims to produce new towns' performative analysis and engage explicitly with spatial projective design. In this collaboration, Siddharth and Lingzhu serve as the Co-CEOs of Place Matrix, while Alain serves as a non-executive Director. Siddharth has been a Senior Research Assistant and lecturer of DUPAD, Lingzhu was a post-doctoral fellow of DUPAD, before joining Tongji CAUPD as an Assistant Professor.

#### Innovation and Breakthrough

MorphoMatrix was driven by the desire to address existing limitations in the field, including the failure to replicate urban design, transport, and health evaluation, as reported by *The Lancet*. After an extensive bibliometric review process, beta testing of generative and other evaluation software, and review of 3D visualisations for communicative urban design and planning, the team sought to innovate with MorphoMatrix, breaking away from existing approaches and debates to address fundamental communicative barriers in mainstreaming urban design and planning research.

## Centre of Urban Studies and Urban Planning

### 1. Professor Anthony Yeh and Dr Zifeng Chen (PhD 2019)

- have published the following paper:

**Chen, Z. F., & Yeh, A. G. O.** (2023). Is prefecture-level city a “city” in China: a critical review, *Eurasian Geography and Economics*.  
<https://doi.org/10.1080/15387216.2023.2267064>

**Abstract:** *The definition and boundaries of cities often determine how research is undertaken due to the areal units used to provide geo-located data and thus affect the research findings. Prefecture-level cities are popular city-equivalent statistical units in China, particularly in studies of inter-city mobility. Most prefecture-level cities in China have been delineated as meso-scale administrative divisions for territorial governance through various approaches of administrative annexation. This study takes a critical look at the city definition in China and summarizes two critical challenges that emerge when prefecture-level cities are adopted as city-equivalent statistical units. The first challenge is that the population and other socioeconomic statistics of different prefecture-level cities are incomparable since a large amount of land administered by such cities is functionally rural. The second challenge is that, because prefecture-level cities cannot represent the real functional areas that are based on a daily labor-shed concept, the estimation of inter-city mobility could be largely erroneous by conflating the real inter-city travel with the de facto intra-metropolitan travel such as daily commuting. While the first challenge has long been addressed by scholars and eventually by the national government of China in 2008, the second challenge remains to be solved. These two challenges demand rigorous attempts to delineate cities in China considering integrated economic and social units. This study sheds light on how delineation of administrative boundaries affects our understanding of city hierarchy and spatial interactions. Its implications are not limited to China but applicable to other countries and regions.*

### 2. Professor Anthony Yeh

- has published the following papers

- (i) Fang, B., **Yeh, A. G. O.**, & Zhang, J. (2023) Percolating spatial scale effects on the landscape connectivity of urban greenspace network in Beijing, China, *Landscape and Ecological Engineering*.  
<https://doi.org/10.1007/s11355-023-00578-2>

**Abstract:** *The construction of an urban green network is increasingly recognized as an effective spatial approach to counteract landscape fragmentation through landscape connectivity conservation. Despite the growing awareness of the importance of “spatial scale”, how to identify critical spatial thresholds and evaluate the consequential ecological effects*

*of spatial scales on the landscape connectivity of urban green network, remains a significant challenge. We examined the effects of spatial scale on the landscape connectivity of urban green networks by detecting critical stepping-stone patches and landscape corridors that maximizes the conservational effectiveness of urban green networks. Our study area is located in the central area of Beijing, China, with a monsoon-influenced humid continental climate. We proposed a graph-based percolation model to simulate the percolation patterns and processes of the landscape connectivity of the urban green network in Beijing. The bond and site percolation models were used to identify critical spatial thresholds in core greenspace patches and landscape dispersal corridors by monitoring the spatial feedback patterns within and across the levels of node, cluster and network. Our study revealed that the landscape connectivity of urban green network exhibited multiple sudden state transitions against percolations. The percolation simulation also demonstrated that the landscape connectivity patterns display divergent ecological patterns and processes across nodal, cluster and network levels. Additionally, the results also identified the existence of critical spatial thresholds, at which urban green network becomes drastically fragmented if such critical “stepping-stone” patches and corridors were destroyed.*

- (ii) Yang, F., **Yeh, A. G. O.**, Wang, X., Yi, H., & Chen, Z. (2023). State-Market Dynamics of Central Business District (CBD) Development in Chinese Cities – An Anchor-Firm Perspective, *Cities*, 143, 104622-. <https://doi.org/10.1016/j.cities.2023.104622>

**Abstract:** *Unlike their Western counterparts, central business districts (CBDs) built in post-reformed China are often situated in remote locations without pre-existing advantages. Neither market-centered nor state-centered mechanisms can sufficiently explain their emergence and growth. Using the lens of state–market dynamics and perspective of anchor firm, this study examines the spatiality and growth of two recently established CBDs in Guangzhou. Important processes are captured. (1) Empowered by soft-budget constraints, the local government can launch ambitious CBD projects in peripheral locations. (2) Owing to its relationship with state-owned enterprises and its capability in manipulating the land market, the local government has adopted an anchor-firm strategy to engender positive externalities that attract additional investments and industries. This strategy has played a crucial role in expediting the launch of a new CBD. (3) Although state initiatives are pivotal in initiating the growth of Chinese CBDs, their effectiveness is subject to the locational attributes of producer services, the central CBD activities. The findings highlight the intrinsic relationship between the state and the market, which is fundamental in theorizing the nature and dynamics of new urban space production in China.*

### 3. Professor Kyung-min Nam and Dr Yifu Ou (SRA)

- have published the following papers:

- (i) **Ou, Y. F., Song, W., & Nam, K. M.** (2024). Metro-line expansions and local air quality in Shenzhen: Focusing on network effects. *Transportation Research Part D: Transport and Environment*, 126: 103991. <https://doi.org/10.1016/j.trd.2023.103991>

**Abstract:** We examine the air-quality effects of urban-rail development in Shenzhen, taking a difference-in-differences approach. This study is motivated by existing mixed evidence on the rail-pollution relationship, which we associate with the dynamic nature of the relationship itself. Our results demonstrate that the relationship varies by time, depending on network density and scale. New station openings had no significant impacts on local air quality or even worsened it until the 2010 metro-line extension, when Shenzhen's metro network density was still low, with limited spatial service coverage. However, the 2016 extension significantly abated air pollution as the network grew denser and more comprehensive. The rail-driven anti-pollution effects tended to be further strengthened with externalities arising from improved network connectivity, spilling over the effects beyond newly opened stations to preexisting ones. Also, metro stations in proximity to neighborhoods that share key characteristics in transit-oriented development tended to generate a greater anti-pollution effect.

- (ii) **Ou, Y., Lee, S., Nam, K., & Lee, K.** (2023). Rethinking Post-pandemic Urban Planning Strategies: Lessons from Singapore and Hong Kong. *Journal of the Korea Planning Association* 58(5): 27-47. <https://doi.org/10.17208/jkpa.2023.10.58.5.27>

**Abstract:** We examine urban planning strategies at multiple scales that Singapore and Hong Kong have reinforced or accelerated as a response to the COVID-19 pandemic. The pandemic tended to further strengthen the rationale for preexisting strategies, such as sustainability-oriented planning in Singapore and compact-city-development initiatives in Hong Kong, rather than demanding their drastic change. Crucial components of their strategic planning toward a green and resilient high-density urban development model include polycentric urban structure, self-contained neighborhoods, three-dimensional mixed land use, accessibility to green/open spaces, and pedestrian-friendly urban environments. Planning regulations and urban design standards form a primary implementation mechanism, and well-aligned policy incentives and public-private partnerships complement them. The efforts Singapore and Hong Kong have made toward a sustainable and compact city offer a useful benchmark case for other cities exploring post-pandemic planning directions.

4. Professor Zhan Zhao, Dr Guan Huang (PDF) and Ms Yuebing Liang (PhD student)

- have published the following papers:

- (i) **Huang, G., Liang, Y., & Zhao, Z.\*** (2023). Understanding market competition among transportation network companies using big data. *Transportation Research Part A: Policy and Practice*, 178, 103861. <https://doi.org/10.1016/j.tra.2023.103861>

**Abstract:** As in a typical two-sided market, the competition between transportation network companies (TNCs) can lead to market fragmentation and loss of matching efficiency between passengers and drivers, whereas a monopoly market may result in the dominant TNC abusing its market power. Therefore, whether to encourage or discourage competition between TNCs is a debatable question for cities. Prior studies explored this question mostly through mathematical equilibrium models, but few have comprehensively investigated it based on empirical analysis using real-world data. To fill this gap, this study proposes a framework to measure and analyze the competition between TNCs using the most accessible ride-hailing trip data. Specifically, using an interpretable machine learning model, we investigate how TNCs' pricing and wage strategies influence their market shares and how competition intensity affects passenger cost and driver income. The results based on large-scale trip records from four TNCs in New York City show that the pricing strategy is more influential than the wage strategy on the market shares and competition intensity. Instead of the top TNC, it is the strategies of challenger TNCs (with sizeable but not the biggest market shares) that affect the competition more. Both the passenger cost and driver income can benefit from competition even after considering the potential loss of matching efficiency, while TNCs' profits shrink with growing competition intensity. These findings suggest that cities should encourage competition between TNCs, yet within a limit. They add empirical evidence to prior studies and provide implications for regulating TNC competition.

- (ii) **Liang, Y., Huang, G., & Zhao, Z.\*** (2023). Cross-Mode Knowledge Adaptation for Bike Sharing Demand Prediction Using Domain-Adversarial Graph Neural Networks, *IEEE Transactions on Intelligent Transportation Systems*. <https://doi.org/10.1109/TITS.2023.3322717>

**Abstract:** For bike sharing systems, demand prediction is crucial to ensure the timely re-balancing of available bikes according to predicted demand. Existing methods for bike sharing demand prediction are mostly based on its own historical demand variation, essentially regarding it as a closed system and neglecting the interaction between different transportation modes. This is particularly important for bike sharing because it is often used to complement travel through other modes (e.g., public transit). Despite some recent progress, no existing method is capable of leveraging spatiotemporal information from multiple modes and explicitly considers the distribution discrepancy between them, which can easily lead to negative transfer. To address these challenges, this study proposes a domain-

*adversarial multi-relational graph neural network (DA-MRGNN) for bike sharing demand prediction with multimodal historical data as input. A spatiotemporal adversarial adaptation network is introduced to extract shareable features from demand patterns of different modes. To capture correlations between spatial units across modes, we adapt a multi-relational graph neural network (MRGNN) considering both geographical proximity and mobility pattern similarity. Extensive experiments are conducted using real-world bike sharing, subway and ride-hailing data from New York City. The results demonstrate the superior performance of our proposed approach compared to existing methods and the effectiveness of different model components.*

## 5. Professor Zhan Zhao

- has published the following paper

Zhou, J.\*, Zhou, M., Zhou, J. & **Zhao, Z.** (2023). Adapting node-place model to predict and monitor COVID-19 footprints and transmission risks. *Communications in Transportation Research*, 3, 100110. <https://doi.org/10.1016/j.commtr.2023.100110>

**Abstract:** *The node–place model has been widely used to classify and evaluate transit stations, which sheds light on individuals’ travel behaviors and supports urban planning through effectively integrating land use and transportation development. This study adapts this model to investigate whether and how node, place, and mobility would be associated with the transmission risks and presences of the local COVID-19 cases in a city. Moreover, the unique metric drawn from detailed visit history of the infected, i.e., the COVID-19 footprints, is proposed and exploited. This study then empirically uses the adapted model to examine the station-level factors affecting the local COVID-19 footprints. The model accounts for traditional measures of the node and place as well as actual human mobility patterns associated with the node and place. It finds that stations with high node, place, and human mobility indices normally have more COVID-19 footprints in proximity. A multivariate regression is fitted to see whether and to what degree different indices and indicators can predict the COVID-19 footprints. The results indicate that many of the place, node, and human mobility indicators significantly impact the concentration of COVID-19 footprints. These are useful for policy-makers to predict and monitor hotspots for COVID-19 and other pandemics’ transmission.*

## 6. Professor Zhan Zhao and Ms Luyun Zhao (PhD student)

- have published the following paper:

**Zhao, L.**, Shen, S., & **Zhao, Z.\*** (2024). Planning decentralized battery-swapping recharging facilities for e-bike sharing systems. *Sustainable Cities and Society*, 101, 105118. <https://doi.org/10.1016/j.scs.2023.105118>

**Abstract:** E-bike sharing has been embraced as a sustainable transportation mode, and its success hinges on efficient recharging facility planning. While battery-swapping technology has emerged as a promising solution for refueling shared e-bikes, the efficient recharging of swapped batteries remains understudied. This study explores two battery-swapping recharging modes, namely, centralized charging (CC) and decentralized swapping (DS). Specifically, a multi-decentralized swapping (M-DS) mode is introduced to incorporate multiple recharging sites within each service area, aiming to enhance recharging efficiency. A general modeling framework is proposed to simulate battery-swapping demand based on available bike-sharing data and optimize facility planning and routes across various recharging modes. The optimization model is formulated into a location-routing problem, addressed by a customized meta-heuristic algorithm. A case study conducted in Shenzhen, China, demonstrates the model's ability to jointly determine optimal facility locations, facility types, and operational strategies. The results indicate significant efficiency enhancement achieved by M-DS, offering both cost savings and improved e-bike availability. Further scenario analysis reveals the flexibility and cost-effectiveness of M-DS, thereby supporting small-scale e-bike sharing services and facilitating the expansion of access to environment-friendly transportation. This study contributes to facility planning for electric micromobility and provides practical insights for industry practitioners.

## 7. Professor Tianren Yang

- has published the following paper:

Chen, P., Wang, W., Qian, C., Cao, M., & **Yang, T.\*** (2023). Gravity-based models for evaluating urban park accessibility: Why does localized selection of attractiveness factors and travel modes matter? *Environment and Planning B: Urban Analytics and City Science*. 0(0). <https://doi.org/10.1177/23998083231206168>

**Abstract:** Gravity-based models have been extensively utilized in urban studies for measuring geographic disparities in access to urban parks over the past several decades. However, despite methodological advancements incorporating various aspects of accessibility, there has been limited focus on the impact of variable selection (e.g., attractiveness factors) and transport modes on accessibility evaluations. This study investigates the differences in gravity-based models for assessing park accessibility based on varying assumptions about attractiveness factors and travel impedance. Semi-structured interviews with local residents were conducted to identify the reasons for park visits in Shanghai. Our bivariate correlation analyses reveal that factors such as park openness and access to public transport were crucial, in addition to conventional factors identified in the literature (i.e., park size and driving accessibility). This insight led to the development of localized accessibility measurements that incorporate park inclusiveness (i.e., entrance fees and opening hours) and multimodal travel options (based on multinomial logistic mode choice models). The results indicate that the refined model produces lower and more varied accessibility levels, which can better capture accessibility

*gaps across different geographic contexts. This accurate and practical identification of accessibility gaps can assist local planners and decision-makers in formulating effective policies and strategies to promote equitable access to urban public parks.*

8. Professor Jun Ma, Dr Feifeng Jiang and Dean Chris Webster

- have published the following paper:

**Jiang, F., Ma, J., Webster, C.J.,** Wang, W., & Cheng, J.C.P., (2024). Automated site planning using CAIN-GAN model. *Automation in Construction*, 159, 105286. <https://doi.org/10.1016/j.autcon.2024.105286>

**Abstract:** *Automated site planning, powered by deep generative methods, excels in creating solutions responsive to existing city structures but often overlooks user-specific design scenarios, leading to less performative solutions across varied urban contexts. Overcoming this challenge requires integrating domain knowledge and nuances of the built environment to enhance context-awareness in automated site planning. This study therefore proposes the context-aware site planning generative adversarial networks (CAIN-GAN) framework. In the case study of New York City (NYC), CAIN-GAN demonstrates its capability to not only synthesize visually realistic and semantically reasonable design solutions, but also evaluate their performance in urban sustainability for informed decision-making. This context-aware, learning-based, data-driven, and user-guided generation process signifies a pivotal advancement in more performative and tailored design solutions. Future studies will focus on refining the CAIN-GAN framework to accommodate diverse user-centric design needs and enhance human-machine interaction in urban development.*

9. Professor Shenjing He

- has published the following papers:

- (i) **He, S., & Cai, R.** (2023). Negotiating the exclusive right to public schools in China's education-featured gated communities under multiscalar and multidirectional urban entrepreneurialism. *Urban Studies*, 00420980231204714. <https://doi.org/10.1177/00420980231204714>

**Abstract:** *How urban entrepreneurialism is enacted at the neighbourhood level while connecting with broader urban processes remains insufficiently explored. This study introduces a novel conceptual framework of multiscalar and multidirectional urban entrepreneurialism to examine the governance of gated communities that involves dynamic interactions between the entrepreneurial local state, developers, gated communities and individual homeowners/investor-citizens. In Chinese cities, the pursuit of quality living and good schools has given rise to 'education-featured gated communities' that package privileged access to K–12 schools with*

*tailor-made residential services. By turning education from a public good into a club good that can be capitalised in the housing price and leveraged in urban (re)development, education-featured gated communities are highly sought after by homebuyers, developers, and local states, becoming an important and integral component of urban entrepreneurialism. When the rising demands of gated community homeowners for school places are not met, activism for quality education within gated communities becomes ubiquitous. Drawing on multiple case studies and multi-source empirical data including national and local policies/documents, in-depth interviews, non-participant observation and site visits, this research examines how homeowners negotiate their exclusive right to public schools through intensive interactions with local authorities. We argue that the semi-private governance of gated communities forms the institutional basis for the 'shareholding enterprise' centring on property values. By unpacking the multidirectional processes of entrepreneurial governance that built upon an effective feedback loop involving multiscalar entrepreneurial endeavours based on shareholder value, this study offers a nuanced and enriched understanding of contemporary urban entrepreneurialism.*

- (ii) Chen, J., **He, S.**, Pan, H., & Shen, J. (2023). Urban new towns, new-(sub) urbanism, neoliberalization, and nexus: From a governance perspective. *Urban Governance*, 3(3), 186-188. <https://doi.org/10.1016/j.ugj.2023.08.001>
- (iii) Dai, M., & **He, S.** (2024). Social mix and subjective wellbeing in Chinese urban neighborhoods: Exploring the domino effects of social capital through multilevel serial mediation analysis. *Habitat International*, 143, 102968. <https://doi.org/10.1016/j.habitatint.2023.102968>

**Abstract:** *As a policy response to residential segregation, social mix has been actively introduced in homogeneous neighborhoods. Focusing on neighborhood social mix in urban China, this research attempts to unravel the domino effects of social capital in mediating the relationships between social mix and residents' wellbeing. Drawing on a dataset with a hierarchical structure and capturing the mediating effects of social capital with various operationalized forms, we conduct multilevel serial mediation analysis. Our research findings verify the sequential mechanism of social capital and reveal that the trigger point of domino effects lies in the occurrence of public familiarity. Following this, most of the subsequent forms of social capital can be generated spontaneously one after another, resembling domino effects. Nonetheless, owing to socioeconomic disparity, such domino effects halt at forms of matters sharing and social leverage, which are particularly conducive to life chances. By situating the progressive formation process of social capital into the broader neighborhood social mix framework, this study helps to unpack the black box of social mix mechanisms in promoting subjective wellbeing. Practically, the empirical findings and policy implications suggest that the design of both social mix indicators and physical space are important for optimizing the development and outcomes of socially mixed neighborhoods.*

- (iv) Terbeck, F., **He, S.**, & Cai, R. (2023). Neighborly help and neighborhood-based social capital during the COVID-19 pandemic in major Chinese cities. *Journal of Housing and the Built Environment*, 1-21. <https://doi.org/10.1007/s10901-023-10076-4>

**Abstract:** As a policy response to residential segregation, social mix has been actively introduced in homogeneous neighborhoods. Focusing on neighborhood social mix in urban China, this research attempts to unravel the domino effects of social capital in mediating the relationships between social mix and residents' wellbeing. Drawing on a dataset with a hierarchical structure and capturing the mediating effects of social capital with various operationalized forms, we conduct multilevel serial mediation analysis. Our research findings verify the sequential mechanism of social capital and reveal that the trigger point of domino effects lies in the occurrence of public familiarity. Following this, most of the subsequent forms of social capital can be generated spontaneously one after another, resembling domino effects. Nonetheless, owing to socioeconomic disparity, such domino effects halt at forms of matters sharing and social leverage, which are particularly conducive to life chances. By situating the progressive formation process of social capital into the broader neighborhood social mix framework, this study helps to unpack the black box of social mix mechanisms in promoting subjective wellbeing. Practically, the empirical findings and policy implications suggest that the design of both social mix indicators and physical space are important for optimizing the development and outcomes of socially mixed neighborhoods.

- (v) Sun, Y., Ling, J., & **He, S.** (2023). Actually existing state entrepreneurialism: From conceptualization to materialization. *Progress in Human Geography*, 0(0). <https://doi.org/10.1177/03091325231219700>

**Abstract:** This paper enriches the understanding of actually existing state entrepreneurialism (SE) through politics of scale, regulatory flexibility, and financialization. The emphasis on "actually existing" uncovers how political discourses are materialized into variegated policy outcomes and territorial politics. The central-local relations and their reinforcement through scalar politics are essential to state regulation, revealing power dynamics in SE. SE represents a distinct governance capacity with regulatory flexibility expressed through state-orchestrated processes designed to meet multifaceted goals. Financialization is instrumentalized in revamping state intervention with commercial and financial logic. Finally, the state is seen as polymorphous in nature given its active stewardship in growth agendas.

- has published the following book chapter:

Wang, K., Qian, J., & **He, S.** (2023). Chapter 20: From state entrepreneurialism to state-led ecological civilisation: changing dispositifs of governing e-waste metabolism and 'cyborg' urbanisation in China's e-waste cities. In Zhang, F and Wu, F. (eds.) *Handbook on China's Urban Environmental Governance*. Cheltenham, UK: Edward Elgar Publishing. 323-339. <https://doi.org/10.4337/9781803922041.00029>

**Abstract:** This chapter provides an urban political ecology analysis of China's environmental governance of e-waste cities. Situating e-waste cities' cyborg urbanisation and e-wastescape transformations within broader power geometries, it explicates how urban environments, as socio-ecological hybrids, are made, remade, and modified by multiscale dispositifs. In all, it showcases two disparate patterns of urban e-waste metabolism and corresponding regimes of environmental governance produced by two distinct sets of dispositifs. Against the first dispositif of "state entrepreneurialism", e-waste cities became urbanised with grassroots, informal workshops "digesting" global e-waste flows. The environmental governance was regime characterised by recurrent episodes of campaign-style governance mobilised by entrepreneurial local states. Against the second dispositif of "ecological civilisation", the technocentric state employs multiple governmentalities to suppress informal workshops and enrol large, modernised industrial parks and formal enterprises into the metabolic imbroglis of e-waste cities. Yet, the state-led construction of an eco-civilised utopia is infused with conflicts and asymmetric power relations. Despite national state's success in re-controlling local environment, contested socio-environmental justices loom large in such socio-environmental changes.

- was awarded the Ashby Prize with her paper recognised as one of the most innovative published in [Environment and Planning A: Economy and Space](#) journal in the calendar year 2022. The award-winning paper is titled '[Global destruction networks and hybrid e-waste economies: Practices and embeddedness in Guiyu, China](#)', co-authored with Dr Kun Wang (Guangdong Academy of Sciences) and Dr Junxi Qian (HKU).

Winners of the Ashby prizes




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The editors of *EPA: Economy and Space* are delighted to announce that the Ashby prizes for the most innovative papers published in the journal in the calendar year 2022 were awarded to **Kun Wang** (Guangdong Academy of Sciences), **Junxi Qian** (University of Hong Kong) and **Shenjing He** (University of Hong Kong) for their paper 'Global destruction networks and hybrid e-waste economies: Practices and embeddedness in Guiyu, China' and to **Andrea Ricci** (University of Urbino) for his paper 'Global locational inequality: Assessing unequal exchange effects'.

The papers have been made free to access for 1 year.

Kun Wang, Junxi Qian and Shenjing He

[More Information](#)

## Healthy High Density Cities Lab

### 1. Professor Chinmoy Sarkar

- attended the Distinguished Lecture by NAM President Dr Victor Dzau at the Li Ka Shing Faculty of Medicine on 4 December 2023, and was invited to a close-door reception involving Dr Dzau and guests to talk about research along with other NAM fellows of HKU and CUHK.



## 2. Dean Chris Webster and Professor Chinmoy Sarkar

- received a team from the US National Academy of Medicine (NAM), Washington DC, on 5 December 2023, to discuss built and social environmental determinants of health and lifestyle.



1. iLab members

- have the following articles published or accepted for publication:

- (i) **Chen, J., Fu, Y., Lu, W., & Pan, Y.** (2023). Augmented reality-enabled human-robot collaboration to balance construction waste sorting efficiency and occupational safety and health. *Journal of Environmental Management*. <https://doi.org/10.1016/j.jenvman.2023.119341>

**Abstract:** Construction waste sorting (CWS) is highly recommended as a key step for construction waste management. However, current CWS involves humans' manual hand-picking, which poses significant threats to their occupational safety and health (OSH). Robotic sorting promises to change the situation by adopting modern artificial intelligence and automation technologies. However, in practice, it is usually challenging for robots to do an efficient job (e.g., measured by quickness and accuracy) owing to the difficulties in precisely recognizing compositions of the mixed and heterogeneous waste stream. Leveraging augmented reality (AR) as a communication interface, this research aims to develop a human-robot collaboration (HRC) approach to address the dilemmatic balance between CWS efficiency and OSH. Firstly, a model for human-robot collaborative sorting using AR is established. Then, a prototype for the AR-enabled collaborative sorting system is developed and evaluated. The experimental results demonstrate that the proposed AR-enabled HRC method can improve the accuracy rate of CWS by 10% and 15% for sorting isolated waste and obscured waste, respectively, when compared to the method without human involvement. Interview results indicate a significant improvement in OSH, especially the reduction of contamination risks and machinery risks. The research lays out a human-robot collaborative paradigm for productive and safe CWS via an immersive and interactive interface like AR.

- (ii) **Wu, L., Lu, W.\*, & Chen, C.** (2023). Resolving power imbalances in construction payment using blockchain smart contracts. *Engineering, Construction and Architectural Management*, Accepted.

**Abstract:**

**Purpose** – This research aims to develop a blockchain smart contract-enabled framework to resolve power imbalance problems in construction payment.

**Design/methodology/approach** – This research adopts a design science research method to develop the blockchain smart contract-enabled framework. We then develop a prototype system. Finally, we evaluate its performance in solving power imbalance-induced payment problems.

**Findings** – The results show that the prototype system can resolve power imbalance problems in construction payment by allowing project participants to make transparent and decentralized decisions that are self-enforceable by blockchain smart contracts.

**Originality** – This paper introduces a novel blockchain smart contract integrated method, allowing project stakeholders to resolve power imbalance problems in construction payment through decentralized decision-making.

**Research implications** – This study provides theoretical explanations for how blockchain smart contracts can resolve power imbalances in construction payment; based on that, it proposes a novel blockchain smart contract-enabled method to rebalance the power of stakeholders in construction payment. Thus, it contributes to the body of knowledge on blockchain technology and construction payment.

**Practical implications** – This study moves beyond a conceptual framework and develops a practical blockchain smart contract system for resolving power imbalances in construction payment, strengthening construction project members' confidence in using blockchain technology.

**Social implications** – The proposed blockchain smart contract-enabled solution helps mitigate negative social impacts associated with late payment and nonpayment. Furthermore, the research maximizes trust among participants in payment processes to inspire collaborative culture in the construction industry.

- (iii) **Lin, X., Chen, J.J., Lu, W.S., & Guo, H.L. (2023).** An edge-weighted graph triumvirate to represent modular building layouts. *Automation in Construction*. Accepted.

**Abstract:** Representing building layouts as graphs can extract critical design patterns that would facilitate space syntax analyses as well as design mining and automation but traditional approaches (e.g., non-weighted adjacent graphs) encountered problems in modular buildings, as they are largely shaped under the principle of 'modularity' rather than freeform cast in-situ elements. This paper attempts to develop a novel analytical tool called ModularGraph to represent modular building layouts (MBLs) as graphs considering their unique adjacency, connectivity, and conjoint relationships in a triumvirate. It does so by developing a prototype then applying it to 36 modular buildings for iteration, finetuning, and finalizing. It is found that ModularGraph can effectively translate heterogeneous forms of MBLs into unified graph-based representations with rich graphic and semantic information. This study not only contributes an innovative graph analytic tool for design pattern mining, but also lays a stepping stone towards generative AI for modular building design.

- (iv) **Fu, Y., Chen, J., & Lu, W. (2024).** Human-robot collaboration for modular construction manufacturing: Review of academic research. *Automation in Construction*, Accepted.

**Abstract:** *By shifting most of the site work to factories, manufacturing becomes a critical phase in modular construction. Human-robot collaboration (HRC) is a promising approach to enhancing modular construction manufacturing (MCM) productivity while maintaining necessary flexibility. However, little attention has been paid to understanding, in a holistic manner, the past, present, and future of HRC in MCM. To fill in this gap, this study presents a review of 78 relevant publications on HRC in MCM, focusing on tasks, human roles, and interaction levels. HRC solutions are found applicable to various MCM tasks whereas existing research primarily focuses on timber component production. It also reveals that humans can play diverse collaborative roles and interact with robots at varying levels. Potential opportunities, challenges, and future directions are further discussed. The review deepens the understanding of HRC in MCM and inspires future research.*

- (v) **Madushika, U.G.D., & Lu, W. (2023)** Green Retrofitting Application in Developing Economies: State of the Art and Future Research Directions. *Energy & Buildings*, 2023, 301, pp.113712. <https://doi.org/10.1016/j.enbuild.2023.113712>

**Abstract:** *Energy consumption and Greenhouse Gases (GHG) by existing buildings must be reduced since they contribute to undeniable adverse impacts on our mother planet. To date, research and development have made significant progress in green retrofitting, but its knowledge in developing economies is minuscule. This study aims to address this gap by reviewing its status quo and proposing future research directions in this domain. A total of 224 relevant articles were identified through the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) approach. A follow-up analysis was then conducted based on scientometric and content analyses. Publication trends, influential countries, and keywords in the domain were analyzed through scientometric analysis. It was discovered that Italy, the USA, and the UK were ranked as the first three places with a higher frequency of publications whereas China, Malaysia, and Egypt appeared in the top rank in a developing context. "Energy" is the most studied green retrofitting topic in both economies. Five areas, namely (1) performance evaluation, (2) performance optimization, (3) adoption, (4) policies and incentives, and (5) stakeholder engagement were identified as the major research interests and future directions for developing economies. The study finally introduced a framework by combining the review results with the nexus of future directions, which is expected to guide appropriate measures to promote green retrofitting in developing economies.*

- successfully organised the 'Digital Transformation of The Construction Industry in the Greater Bay Area' workshop on 4 November 2023.



The workshop was opened by Professor Wilson Lu and Dean Chris Webster. The morning session featured senior speakers including Academician Professor Xiangsheng Chen, Ar Ada Fung, Professor Geoffrey Shen, Professor Liyin Shen, and Professor Kelvin Zhou. The afternoon session was a Youth Forum delivered by PhD graduates from iLab.

- PhD students at iLab presented papers at the 23rd International Conference on Construction Applications of Virtual Reality (CONVR 2023) in Florence, Italy, on 13-16 November 2023. Hosted by the Department of Architecture, University of Florence, CONVR 2023 brought together AEC researchers and practitioners from around the globe to report on and exchange the latest developments stemming from innovative research activities in the areas of Virtual Reality, Augmented Reality, and Building Information Modeling.
1. **Kong, L. (Year 2 PhD student), Zhao, R. (Year 3 PhD student), Xue, F. (2023).** Zero-knowledge proof for trusted construction management: A preliminary study of adaptive blockchain BIM identity authentication. Proceedings of the 23<sup>rd</sup> International Conference on Construction Applications of Virtual Reality. Florence, Italy: University of Florence Press, 347-355.
  2. **Wang, J. (Year 2 PhD student), Shen, G. Q. & Xue, F. (2023).** Carbon tracking in the building sector: A 'cabbage' framework. Proceedings of the 23<sup>rd</sup> International Conference on Construction Applications of Virtual Reality. Florence, Italy: University of Florence Press, 1092-1100.
  3. **Chen, Z. (Year 3 PhD student), Guo, Z., Xue, F. (2023).** A value stream mapping approach to the identification of lean management opportunities for off-site construction production: A case of reinforced concrete slabs. Proceedings of the 23<sup>rd</sup> International Conference on Construction Applications of Virtual Reality. Florence, Italy: University of Florence Press, 392-401.



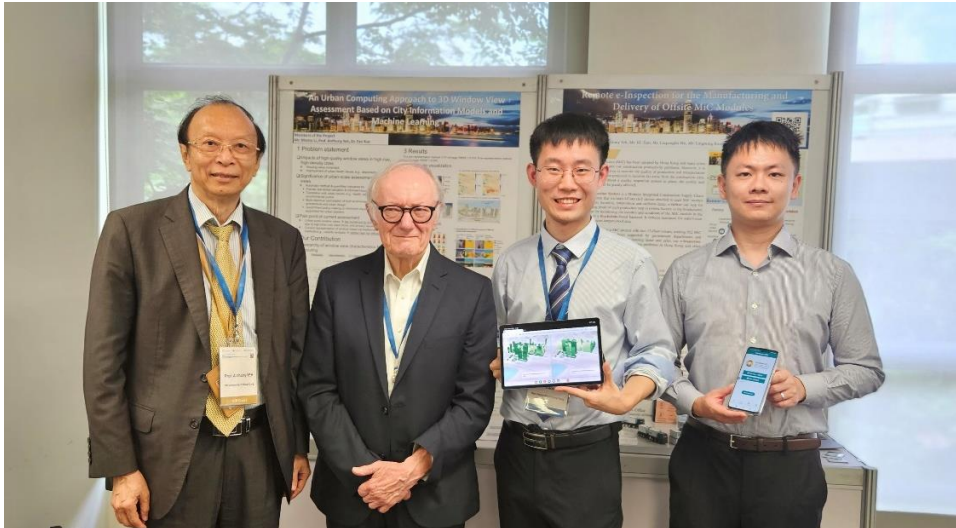
iLab PhD students and Professor Rafael Sacks, keynote speaker at CONVR 2023

- Professor Wilson Lu, four members of iLab (Mr Liang Yuan, Ms Zhongze Yang, Mr Benjamin Ababio, and Ms Wenjun Gao) and five FoA students attended the Urban Construction and Development Workshop on 12-18 November 2023, co-organised by HKU FoA and the School of Management Science and Real Estate of Chongqing University, focusing on the current situation, planning, implementation, management, and technology of urban construction and development. The Workshop enabled students to have a better understanding of the development of Chongqing as an essential link in the Belt and Road Initiative and the construction of the Chengdu-Chongqing Economic Circle, through teaching, lectures, project visits, field trips, discussions, and presentations.



2. Professor Wilson Lu, Professor Anthony Yeh, Dr Liupengfei Wu and Mr Maosu Li (PhD student)

- participated in the 3rd International Conference on Urban Informatics 2023 at the Hong Kong Polytechnic University on 20-23 August 2023, with their project 'Remote e-Inspection System for the Manufacturing and Delivery of Offsite Modular Construction'.



From left to right: Professor Anthony Yeh, Professor Michael Batty, Mr Maosu Li and Dr Liupengfei Wu

3. Mr Liang Yuan and Miss Wendy M.W. Lee (PhD students)

- attended the 19th International Symposium on Waste Management, Resource Recovery and Sustainable Landfilling (also called 'Sardinia 2023'), a top academic conference held in Sardinia, Italy, from 9 October to 13 October 2023.

Mr Yuan delivered a presentation titled 'Automatic estimation of recyclable construction waste compositions: A combinatorial computer vision-big data approach'.

Miss Lee delivered a presentation titled 'Public policies on illegal construction waste disposal in Hong Kong: Evaluation and enhancement'.



4. Professor Wilson Lu, Dr Junjie Chen, and PhD students Mr Rui Zhao, Ms Zhongze Yang, Mr Yonglin Fu and Ms Lu Yang

- attended the LSCM Logistics Summit 2023 at the Hong Kong Science Park on 11 October 2023. It is a flagship event organised by the Logistics and Supply Chain MultiTech R&D Centre, which has funded several large-scale Innovation and Technology Fund (ITF) projects in the Department of Real Estate and Construction.



5. Professor Wilson Lu

- gave a keynote speech at the annual conference organised by the Occupational Safety and Health Branch of the Labour Department on 11 October 2023. This iconic event of the Branch was officiated by the Commissioner of Labour Department.



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Occupational Safety and Health (OSH) Bureau Annual Conference, Panda Hotel, Hong Kong, 11 October 2023

## BIM and DT (Digital Twins) for Construction Occupational Health and Safety

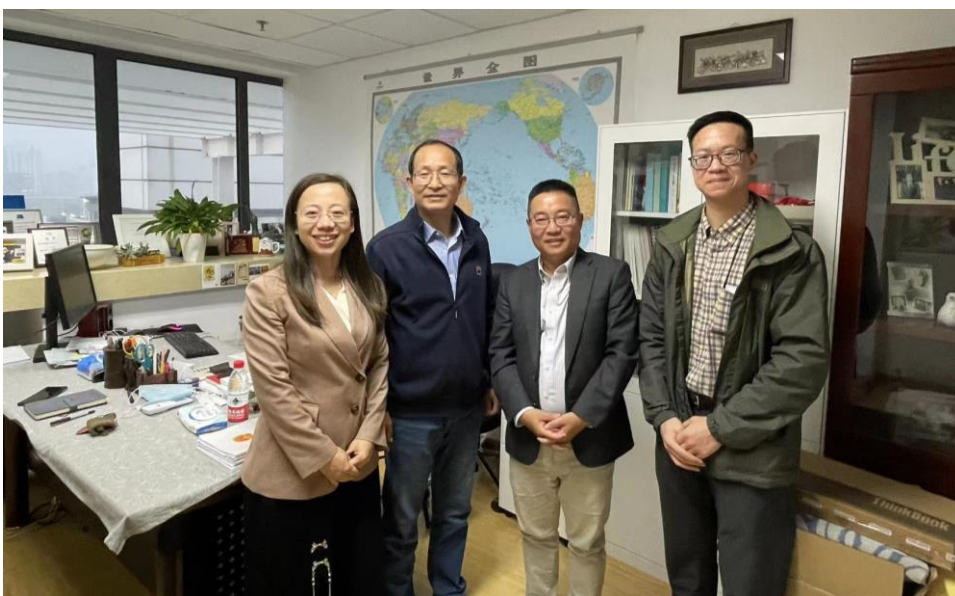
Professor Wilson Lu  
Chair Professor (Digital Construction) and Head  
Department of Real Estate and Construction,  
Faculty of Architecture  
The University of Hong Kong.  
Email: [wilsonlu@hku.hk](mailto:wilsonlu@hku.hk)  
Web: [fac.arch.hku.hk/wilson](http://fac.arch.hku.hk/wilson)

- attended the CRIOCM (Chinese Research Institute of Construction Management) Council Meeting in Hebei Province on 28 October 2023.



This is the first CRIOCM council meeting after COVID-19. It was held at the Hebei University of Economics and Business.

- visited Tianjin University and Tianjin municipality for the first time during 29-31 October 2023. The College of Management and Economics and Department of Hydraulic and Hydro-power Engineering have a traditional link with iLab, as they consistently sent us graduates and young staff as PhD students or Post-doctoral Fellows based on the 'China Network' scheme established 20 years ago. In this trip, Professor Lu met with Professor Shuibo Zhang, who graduated from REC around year 2000 and is now a leader in the field of construction and engineering management in China. He also met with some other faculty members who graduated from REC recently.



From left: Dr Ying Gao (REC PhD graduate, Assistant Professor, Tianjin University), Professor Shuibo Zhang (REC PhD graduate), Professor Wilson Lu and Dr Junjie Chen (RAP, REC)

Professor Lu then gave a talk on 'BIM, i-Core, and blockchain for cross-border modular construction logistics and supply chain management' in the Department of Hydraulic and Hydro-power Engineering.



Professor Lu received a souvenir from Professor Donghai Liu of Tianjin U

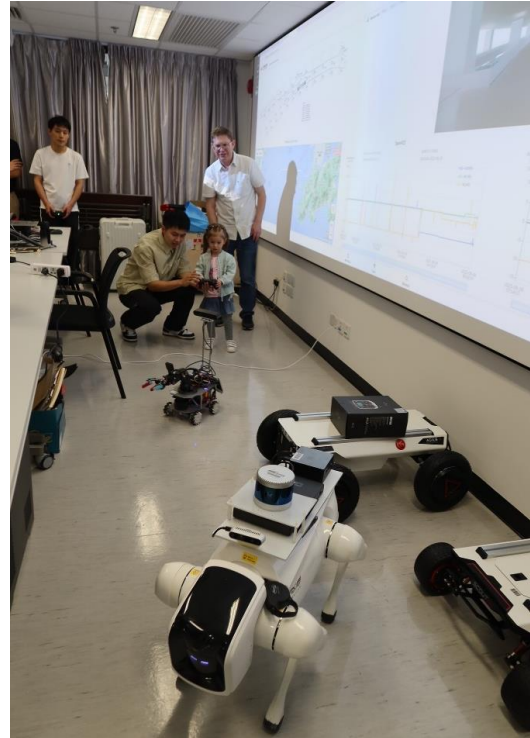
He also visited the 'Large-Scale Scientific Instrument' – the RMB 1.5 billion National Facility for Earthquake Engineering Simulation.



## 6. iLab members

- received the Pacific Association of Quantity Surveyors (PAQS), chaired by Sr Goh Ngan Hong (SISV), with members Sr Chua Siow Leng (RISM), Sr Wong Yi Min (SISV) and Dr Sandy Tang (HKIS), on 13 November 2023. iLab members introduced the construction technologies implemented in their research projects, including mechanic arms, automatic robots, blockchain oracle (I-core), etc. The visit established a friendly bridge and explored potential collaboration possibilities between iLab and PAQS.
- received four groups of 80 visitors from the HKUEAA (HKU Engineering Alumni Association) Homecoming Walk on 15 October 2023. They included the Director of the HKSAR Government's Electrical and Mechanical Services Department (EMSD), CEO of CLP, and many senior figures from MTR and other

organisations. This gave a good exposure to both the young and senior generations about the architecture, engineering, and construction (AEC) industry and the innovations and technologies at the frontier.



REC Chair Professor Wilson Lu, as iLab Director, Professor Frank Xue and Dr Junjie Chen, as Deputy Directors, and the team introduced their R&D projects, including 'MiC Three Treasures' (MiC 三寶), 'i-Core' for boardwalk and MiC tracking and safe installation/hoisting, robots and laser scanning for construction site progress and quality inspection, and other blockchain, robotics, and AI-enabled digital construction technologies.

## MetaBIM Research Lab

### 1. Professor Llewellyn Tang

- has launched the first SuperApp for smart city through his Llewellyn & Partners Co. Ltd. (LPC), the first potential unicorn incubated by the MetaBIM Research Lab. The SuperApp aims to achieve smarter and sustainable cities by streamlining data processing and integrating ISO knowledge to generate data-driven insights. It integrates the AutoCDE smart asset system that uses intelligent BIM solutions to benefit sectors such as transportation, property management and public utilities, to pursue carbon neutrality. The SuperApp will be developed across 160 countries.

On 10 November 2023, LPC signed an MOU with Hong Kong Green Building System (HKGBS) and Keptain MENA Investment No.1 LPF, to establish a joint venture focusing on smart technology and carbon management innovation primarily targeting the United Arab Emirates, Saudi Arabia, Indonesia, and other emerging markets. This collaboration is committed to advancing global infrastructure by implementing intelligent technology solutions, aligned with ESG principles and carbon neutrality goals.

#### [HKU Press Release](#)



- won the 2023 Hong Kong ICT Startup Silver Award (Software and Apps) and 'Towards Net Zero Innovation and Technology Excellent Award' from the World Institute of Sustainable Development Planners (WISDP), for his 'AutoCDE' SuperApp, a smart built asset management platform which Professor Tang developed with his team. The awards are highly competitive with more than 100 entries.



- was invited to speak for the two-day Asia-Pacific Business Forum 2023, jointly organised by the United Nations' Economic and Social Commission for Asia and the Pacific (ESCAP) and the ESCAP Sustainable Business Network, with support from the HKSAR Government's Environment and Ecology Bureau, on 22-23 November 2023.

The Forum brought together government officials, entrepreneurs, investors, private sector enterprises and academics from around the region. Under the theme of 'An Asia Pacific Green Deal for Business: Driving the Green Transformation', participants discussed the role of business in driving a 'green deal' and how businesses are decarbonising their operations and scaling up sustainability initiatives in the region.



Professor Llewellyn Tang (third from the right) at Asia-Pacific Business Forum 2023

## Real Estate Lab

### 1. The Real Estate Finance and Investment Symposium 2023

- was successfully held on 19 – 21 October 2023, welcoming scholars around the globe to create a vibrant platform for engaging conversations, insightful presentations, and networking opportunities. The symposium featured a variety of thought-provoking presentations, covering key topics such as real estate funds, infrastructure investment and privatisation, real estate price index methodologies and performance measurement and international real estate investment.



For event highlights and more photos, please visit the [RE Lab](#) website.

# Social Infrastructure for Equity and Wellbeing (SIEW) Lab

## 1. Professor Shenjing He

- has published the following co-authored papers with PhD students Mr Lu Shan and Ms Chenxi Li

- (i) **Shan, L., & He, S.\*** (2023). Intensified discrimination against tenants and its health effects during the COVID-19 pandemic in large Chinese cities. *Scientific Reports*, 13(1), 22316. <https://www.nature.com/articles/s41598-023-48935-3>

**Abstract:** The COVID-19 pandemic in many senses reconstructs social norms and reshapes social behaviour, which typically assumes a close correlation between mobility with a higher risk of COVID-19 infection. This may intensify the pre-existing discrimination against tenants and widen tenure-based health inequalities. Drawing on an online questionnaire survey conducted in five major cities in China in 2020, we employ multi-level regression models to examine the intensified discrimination against tenants during COVID-19 and its impacts on residents' physical and mental health inequalities. Results show that the pre-existing inequalities have been intensified during COVID-19 and the perceived discrimination has rendered worsened self-rated health and mental health and enlarged health inequalities. The discrimination particularly affected tenants with better economic profiles or worse health conditions; by contrast, despite being exposed to more tenant-related discriminatory experiences, rural hukou holders suffered from less severe health inequalities. A clear linkage is found between renting in poorly-managed and larger health gaps generated by discrimination. The negative health impact of intensified discrimination is found to be more significant in communities with lower infection risk, which points to the necessity of understanding the long-term health impact of discrimination against tenants in a more holistic way. In terms of community environment, we discover a positive effect of community social capital, i.e., higher level social capital helps mitigate the health threat of discrimination against tenants during COVID-19. Besides, public housing tenants reported better health outcomes and were less exposed to intensified discrimination during COVID-19 than private housing tenants. These findings provide a nuanced understanding of variations determined by individual and territorial factors, thus present timely policy implications for promoting healthy and inclusive urban development in the post-pandemic era.

- (ii) **Li, C., & He, S.\*** (2023). Changing roles of the state in the development of long-term rental apartments under a transitional housing regime in China. *International Journal of Housing Policy*, 1-25. <https://doi.org/10.1080/19491247.2023.2284856>

**Abstract:** Long-term rental apartments (LRAs) are booming in Chinese megacities in recent years, largely facilitated by various forms of state intervention in the private rental sector. Focusing on the state's endeavours

*in promoting LRA development and incorporating it into the affordable rental housing scheme nationwide, this study explores the changing roles of the state in two stages of LRA development through the conceptual lens of housing regime. Drawing on a comprehensive policy analysis and a field investigation in Beijing, our major findings are threefold. First, two stages of LRA development—market-led under state supervision (from 2015 to 2019) and state-led development (after 2019) are identified, in which highly responsive state interventions were introduced to cope with the housing affordability crisis and maintain social stability. Second, the role of the state shifted from a facilitator to an active participant with the deepening involvement of state-owned enterprises in the rental housing market. Third, a transitional housing regime shifting from a productivist regime to a developmental regime is underway to achieve different socioeconomic goals. This study enriches our conceptual and empirical understanding of the latest episode of housing and land policies in response to the volatile political and socioeconomic climate by introducing a transitional housing regime in urban China.*

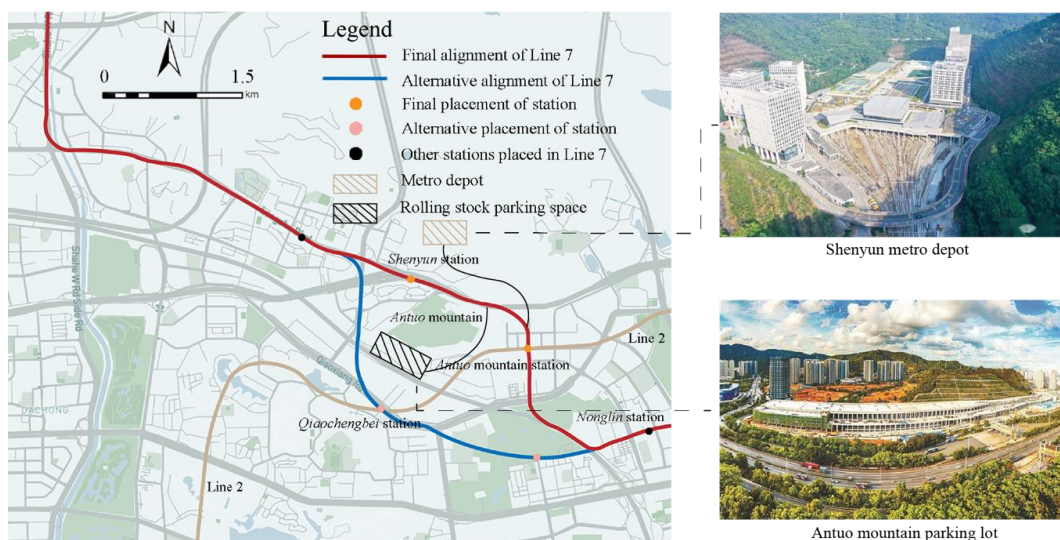
# Urban Analytics and Interventions Research Lab

## 1. uLab researchers

- have published the following papers:

- (i) **He, D., Sun, G.\* , Li, C., & Webster, C. (2023).** New metro and housing price and rent premiums: A natural experiment study in China. *Urban Studies*, 1-21. doi.org/10.1177/00420980231208560

**Abstract:** Causal evidence of housing premiums of new metro lines was indispensable for financing and governing infrastructure investments. Previous studies have investigated the housing effects of urban rail transit with varying methods, while causality remains unsettled. This study used a natural experiment to estimate the causal effects of the new metro interventions on housing premiums in Shenzhen, China. We used metro planning knowledge, reasoning on pursuits in land finance and engineering efficiency to verify the as-if randomness of the treatment-control group assignment in the natural experiment to reinforce the power of causal inference. We applied hedonic difference-in-difference (DID) models to estimate the average treatment effects based on the longitudinal housing price and rent data. We found that housing rents increased significantly and consistently after the metro entered operation, but the price premium varied. In addition, the rent premiums around new metro lines showed a price gradient over the distance to stations. Our findings provide scientific evidence for designing value capture mechanisms (e.g. value-added property tax and rent revenue) to recover metro investment costs in China.



As-if randomness in treatment and control group assignment in natural experiment research design

- (ii) **Zhao, J., Sun, G., & Webster, C. (2023).** Understanding people-centric street transition: constructing a global geospatial database for pandemic-induced street experiments. *Landscape and Urban Planning*, 242, 104931, 1-16. <https://doi.org/10.1016/j.landurbplan.2023.104931>

**Abstract:** Street experiment is a tactical urbanism practice that involves implementing temporary changes in street use through regulatory or physical interventions, aimed at people-centric street transition. During the COVID-19 pandemic, cities worldwide implemented street experiments to accommodate the need for socially-distanced physical and commercial activities. However, we know little about the locations and urban environments of these pandemic-induced street experiments on a global scale. This knowledge gap hinders us from understanding where these experiments took place, the conditions of the neighbourhoods involved, and the factors contributing to their longevity beyond the pandemic. We thus developed a geospatial database to document the pandemic-induced street experiments (PISE Database), enabling quantitative analysis of these interventions. We mapped the locations and calculated the neighbourhood environment attributes of 539 street experiments in 333 cities. Our contributions are twofold. Firstly, we enhanced the comparability of built environment indicators between cities, thereby advancing the construction of global geospatial datasets. Specifically, we established a standardised template encompassing unified neighbourhood-level built environment indicators and methodologies, for which we devised relative values to facilitate comparisons between different cities and defined study areas using the 15-minute walking city and Urban Centre concepts. Secondly, we conducted primary analyses based on spatial and temporal visualisations of the street experiment locations and durations, shedding light on locational patterns and development trajectories during times of crisis. This global, quantitative approach complements the growing body of local and often qualitative studies. Our work improves existing global quantitative databases and provides a robust foundation for future research on tactical urbanism.

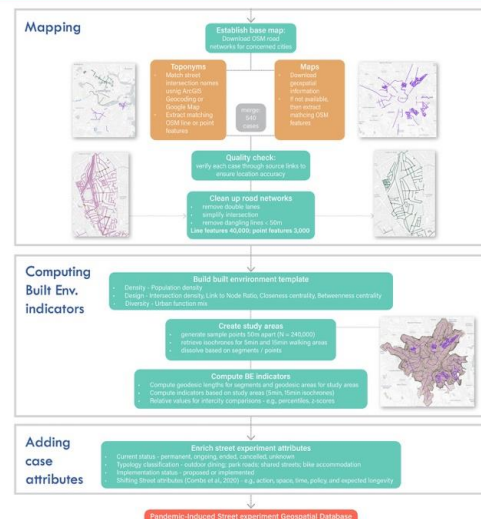
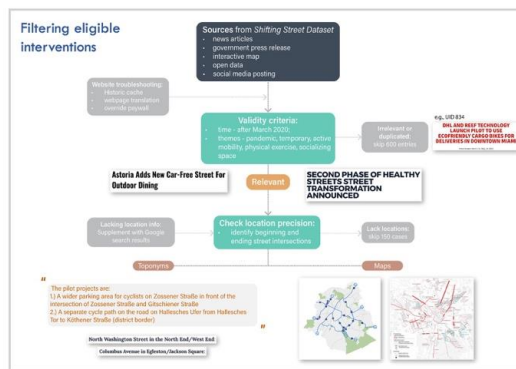
#### Methods (Zhao, et al., 2024)

Urban Analytics and Interventions  
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#### Global Street Experiment: A Geospatial Database of Pandemic-induced Street Transitions

Jianting Zhao, Guibo Sun<sup>\*</sup>, Chris Webster

Urban Analytics and Interventions Research Lab, Department of Urban Planning and Design, The University of Hong Kong, Pok Fu Lam Road, Hong Kong, China



Method for pandemic-induced street experiments (PISE Database)

## 2. Professor Guibo Sun

- was awarded the Lincoln Institute China Program International Fellowship, for his proposed research on gated communities and metro-created accessibility, which was selected among global applications through a competitive evaluation process. The Fellowship was awarded at the amount of US\$35,000, and for a period of 15 months (1 March 2023 – 31 May 2024).



- received HK\$50,000 from the HKU Overseas Fellowship Awards (2023-24), which was established by the University Research Committee to support 10 academic staff members of the University to visit overseas institutions for not less than one month to develop research links and academic exchanges.
- have submitted the following policy reports:
  - (i) 'Are Gated Communities Capturing the Lion's Share of Metro-created Accessibility in Chinese Cities?'  
Mid-term report to Lincoln Institute China Program International Fellowship (US), November 2023.
  - (ii) 'Market Research for Hong Kong Planning and Development Surveyors in Belt and Road Countries: Case studies of Vietnam, Thailand and Malaysia' (co-authored by Ms Yao Du, PhD student)  
Final report to the Hong Kong Institute of Surveyors, July 2023.
- held two short-term visiting research positions:
  - (i) Visiting Researcher: [Transport Studies Unit, University of Oxford](#), August – November 2023.
  - (ii) Visiting Scholar: [Peking University-Lincoln Institute Centre for Urban Development and Land Policy](#), June 2023.

- was invited to give five seminars on 'Evaluating the Social, Economic, Health, and Wellbeing Effects of Large-scale Metro Infrastructure Projects through Natural Experiments', at Guangzhou Metro Group (18 April 2023), Peking University (17 June 2023), Tsinghua University (23 June 2023), University of Oxford (7 November 2023) and University of Glasgow (9 November 2023).



- presented his natural experiments studies on large-scale interventions in cities, at the Association of European Schools of Planning Annual Congress (Paris, 11 July 2023), the UK-Ireland Planning Research Conference (Glasgow, 5 September 2023), and the Healthy City Design International Congress (Liverpool, 16 October 2023).

### 3. Ms Yao Du (PhD student)

- attended the ACSP Annual Conference 2023 in Chicago on 18-21 October 2023, and presented her latest research on the causal pathways linking the new metro to eudaimonic well-being and the community's efforts in creating supportive environments for older adults.

### 4. Ms Jianting Zhao (PhD student)

- attended the PhD workshop of the Association of European Schools of Planning (AESOP) in July 2023 in Poznan, Poland, where she shared her dissertation research with counterparts from over 20 universities worldwide.
- presented her PhD dissertation on global street experiments at the International Conference on Urban Informatics, held on 20-23 August 2023 in Hong Kong.
- presented her work titled 'Public Engagement Tactics in the COVID-19 Pandemic-Related Street Experiments' at PLATIAL'X – International Symposium on Platial Information Science, held on 19-21 September 2023 in Dortmund, Germany.

5. Dr Jinshuo Wang (PDF)

- presented her Chengdu metro land value capture research at the 2023 International Forum on Future Urban Development and Urban China Research Network (UCRN) Conference at Peking University, on 28-29 October 2023.

6. Mr Dongsheng He (PhD student)

- attended the International Association for China Planning (IACP) Conference in Tianjin, China, on 28 June – 2 July 2023. There, he shared his recent study on metro intervention and physical activities among older adults in Hong Kong.
- attended the PhD workshop of the Planning, Law, and Property Right 17th Conference in Ann Arbor, Michigan, on 1-5 May 2023. There, he shared an ongoing project regarding metro intervention and housing values.



- was selected as a finalist by the UK RTPI Early Career Researcher Award for the following work:

**He, D., Sun, G., De Vos, J., & Webster, C. (2022).** The effects of metro interventions on physical activity and walking among older adults: A natural experiment in Hong Kong. *Health & Place*, 78, 102939. <https://doi.org/10.1016/j.healthplace.2022.102939>



## Urban Environments and Human Health Lab

1. Professor Bin Jiang, Professor Binley Chen, Dr Wenyan Xu (PhD 2023) and Dean Webster

- have published the following paper:

**Xu, W., Jiang, B.,** Sullivan, W.C., **Webster, C.,** Lu, Y., Chen, N., Yu, Z. W., & **Chen, B.** (2023) Racial Disparities in Environmental Exposure and SARS-CoV-2 Infection Rates: A Detailed Population-Weighted Analysis, *Sustainable Cities and Society*, 105135, ISSN 2210-6707. <https://doi.org/10.1016/j.scs.2023.105135>

**Abstract:** *The COVID-19 pandemic has cast a spotlight on the intersection of socio-economic, demographic, and environmental factors with public health, particularly in the context of SARS-CoV-2 infection rates. A gap remains in understanding how racial disparities in environmental exposure correlate with racial disparities in infection rates. This study bridges that gap by analyzing infection data for black and white populations across 1,416 counties in the contiguous United States, utilizing high-resolution land cover data and racial population maps to assess environmental exposure disparities. We found significant connections between racial disparities in environmental exposure and SARS-CoV-2 infection rates, even after accounting for population density, socio-economic status, and demographic factors. Disparities among black and white population's access to green spaces, such as non-park forests and pasture/hay areas, as well as to developed areas of varying intensities, closely mirror racial disparities in infection rates. Crucially, we found that smaller differences in environmental exposure between races are associated with smaller differences in infection rates. This relationship is most pronounced within a 400-meter radius, underscoring the critical role of proximity in the design of urban and landscape environments to promote public health equity.*