

As promised some time ago, here's FoA's first example of AI-generated blogging.

A Dean's Roundup on urban wilderness, the theme started in last Roundup, which was co-written with a student (my son). This time I'm co-writing with a machine – let me introduce you to ChatGPT, from the San Francisco tech company OpenAI (<https://openai.com/blog/chatgpt/>).

First a back story. My first post-doctoral job, started in 1984 (nice touch for the AI theme), was teaching economic modelling and development studies to urban planning master's students. Bored, and struggling with the shift from PhD researcher to teacher, I enrolled in my own master's degree in Cardiff University's Computing Mathematics Department, teaching one hour and running across campus the next, to be taught. One of the attractions was learning to code in several AI languages. Among other AI approaches fashionable at the time were so-called expert systems. I learned to build them, but no one really believed they were in any meaningful sense expert. Where have we come, almost 40 years on?

ChatGPT uses 'augmented learning with human participation', which calibrates machine learning of inference techniques and heuristics, construction of arguments, mixing of argument with facts, and so on. In the calibration process, people ask questions and machines answer, machines ask questions and people answer. This process produces model answers, which are improved and learned from, through continuous iteration. The AI 'brain' gradually develops the ability to generate answers to questions, and to judge the quality of its own answers.

Here's ChatGPT's take on urban wilderness. All that follows (italics) is computer generated text. The prompts from me that generated the blog are in the footnote.¹

***Human wildlife interaction and wilderness areas in cities:
thoughts from an advanced AI computer***

Human-wildlife interaction in cities can refer to the ways in which humans and wildlife interact with each other in urban environments. This can include both positive interactions, such as people enjoying watching birds at a bird feeder in their backyard, and negative interactions, such as conflicts between humans and wildlife over resources like food or shelter. These interactions can have both positive and negative impacts on both humans and wildlife.

It is possible to create wilderness areas in cities, although these areas may be somewhat different from traditional wilderness areas. These urban wilderness areas can provide important habitat for wildlife, as well as opportunities for people to connect with nature and experience the benefits of being in a natural environment. These areas can be created through the use of green spaces and parks within the city, as well as through efforts to restore natural habitats and protect existing wildlife areas within the city.

When cities meet wilderness green space, it can create a unique and dynamic environment where urban and natural environments coexist. This can provide important benefits for both humans and wildlife. For humans, it can provide opportunities for recreation, relaxation, and connecting with nature in the midst of the city. For wildlife, it can provide vital habitat and resources that can help support healthy and diverse populations.

Very large parks in cities can provide a range of benefits for both humans and wildlife. For humans, these parks can provide important green spaces for recreation, relaxation, and exercise. They can also help to improve air and water quality, reduce noise and air pollution, and provide aesthetic benefits. For wildlife, very large parks can provide important habitat and resources, helping to support

¹ 'Human wildlife interaction in cities'; 'Is it possible to create wilderness areas in cities?'; 'What happens when cities meet wilderness green space?'; 'What are the benefits of very large parks in cities?'; 'How can you maximise biodiversity in urban green spaces?'; and to test ChatGPT's ability to make more sophisticated inference and tell a story – Hong Kong is not too dissimilar to Greater London in size and population. But 40% of Hong Kong's territory is steep sub-tropical jungle with national park status. People live at very high density along the coastal margins. The interior, initially designed as protected water-catchments by 19th century engineers, is home to an endangered mammalian species, the Chinese pangolin, and a rich set of wild fauna including cobras, pythons and wild boars. Several principles may be learned about how humans can coexist with biodiversity and wilderness areas.

healthy and diverse populations of plants and animals. These parks can also serve as important corridors for wildlife to move through the city, helping to support connectivity between natural areas.

To maximize biodiversity in urban green spaces, there are several steps that can be taken. These can include:

- 1. Planting a diverse range of native plant species, which can provide food and shelter for a wide variety of animals.*
- 2. Protecting and restoring natural habitats, such as wetlands and forests, which can support a wide range of species.*
- 3. Reducing the use of pesticides and other chemicals, which can harm wildlife.*
- 4. Creating habitat features, such as nest boxes and bat houses, to support specific species.*
- 5. Providing clean water sources, such as birdbaths and ponds, which can support a variety of aquatic and semi-aquatic species.*
- 6. Implementing sustainable management practices, such as reducing mowing and promoting natural processes, which can support healthy ecosystems.*

By taking these steps, it is possible to create urban green spaces that support a rich and diverse array of plants and animals.

Hong Kong is a unique city, with a mix of dense urban development and protected natural areas. The fact that so much of the city's territory is made up of national parks and other protected areas shows the value that the people of Hong Kong place on preserving their natural environment.

One principle that can be learned from Hong Kong's approach to coexisting with biodiversity is the importance of balancing development with conservation. By designating large areas of the city as protected national parks, Hong Kong has ensured that these areas can continue to support a rich diversity of plant and animal life, even as the city grows and develops.

Another principle that can be learned from Hong Kong is the value of collaboration and partnerships. The Hong Kong government works closely with conservation organizations and other groups to protect the city's natural areas and promote coexistence with wildlife. This collaboration allows for a more comprehensive and effective approach to conservation, and helps to ensure that the needs of both people and wildlife are taken into account.

Overall, Hong Kong offers a valuable example of how humans can live in harmony with the natural world, even in the midst of a dense, urban environment. By prioritizing conservation and working together, it is possible to protect biodiversity and wilderness areas, and to create a sustainable future for both people and the natural world.

What do you think? Personally, I might give ChatGPT a grade of, say 58% as a second year undergraduate writing on the matter – so boundary 2:2-2:1. Note that it inferred a reasonably impressive list of steps towards urban biodiversity; it inferred some general principles from Hong Kong' particular success in achieving urban wilderness biodiversity; it ignored the details I gave it about Hong Kong's wilderness fauna; did not pick up the interesting point about HK's endangered mammalian species; and had obviously learned from its human calibrators to round the blog off with a nice, but rather anodyne homily.

My own litmus test was whether the world's most advanced text generating inference engine and writing machine could match the inference power of a student (last week's urban wilderness blog derived a theory from pretty much the same facts fed to ChatGPT):

urban wilderness = a function of (steep terrain) OR (size)

Size and steep terrain are substitute causal factors in wilderness

Size+steep is a strong predictor of wilderness outcomes

My conclusion so far: Student 1 – Computer 0.

I expected more after 40 years of AI development. Next DRup on urban wilderness will be co-authored with an FoA undergraduate.

Congratulations to colleagues mentioned below for a rich report of impactful and ingenious scholarship, and inspiring teaching and learning.

Chris Webster

Dean, FoA

Written in conversation with ChatGPT and Zhao Rui (Jeremy), MPhil student in our Real Estate and Construction Department. Thanks also to Frank Xue in HKU's iLab.

Faculty of Architecture

1. New colleague

- A warm welcome to Mr Jeffrey Valentino Widjaja, who joined our Faculty as Assistant Lecturer at the Department of Architecture in November 2022.

Jeffrey obtained his Master of Architecture & Urbanism from Architectural Association's Design Research Laboratory (AADRL) in the UK, and has seven years' experience in the architectural profession, especially in the integration of new technologies in architecture, such as computational design and digital fabrication.

At ARC, he provides technical, logistical and pedagogical support to teachers, students and researchers of the Fabrication and Material Technologies Lab.

2. 2022 Teaching Excellence Awards

- Mr Nikolas Ettel of Division of Landscape Architecture has received the Early Career Teaching Award under the University's Teaching Excellence Awards scheme of this year.

The Selection Panel was deeply impressed with the awardees' dedication to teaching, their tireless and creative efforts to make learning enjoyable and challenging, and the impact they have made on student learning.

Nik runs the Faculty's experimental AFIC foundational course taken by all FoA undergraduates from our five Bachelor's programmes and designed to introduce them to the built environment professional ecosystem and the built environment research ecosystem.

3. Correction Notice

- The 'World's Top 2% Scientists by Citation' entry, published in the Dean's Roundup dated 11 November 2022, missed mentioning Dr Binley Chen as one of the FoA members who have been ranked in the world's top 2% most-cited scientists for the year of 2021, which should be corrected as follows:

Citation data in 2021 (single-year performance)			
Name	Rank (self-citation excluded)	Position	Department
Wilson Lu	10,802	Professor	REC
Shenjing He	19,827	Professor	DUPAD
Chris Webster	38,353	Dean and Professor	FoA/DUPAD
Xingjian Liu	43,730	Associate Professor	DUPAD
Jiangping Zhou	50,715	Associate Professor	DUPAD
Anthony Yeh	50,899	Professor	DUPAD
Chinmoy Sarkar	53,078	Associate Professor	DUPAD
Steve Rowlinson	82,719	Emeritus Professor	REC
K. W. Chau	89,918	Professor	REC
Binley Chen	107,436	Assistant Professor	DLA

The scholars were ranked in the Updated Science-wide Author Databases of Standardized Citation Indicators, compiled by a research team at Stanford University and led by Professor John Ioannidis. It is a database of top scientists across the world, created according to standardised citation indicators, including h-index, co-authorship adjusted hm-index, citations to papers in different authorship positions, etc. The latest dataset is based on the 1 September 2022 snapshot from Scopus and is updated to citation year 2021.

- [More information](#)

Department of Architecture

1. Anderson Lee

- was invited by the Hong Kong Institute of Architects (HKIA) to deliver a keynote speech to a group of 168 newly Registered Architects at the HKIA/ARB New Member Certificate Presentation Ceremony 2022, which took place at the Kowloonbay International Trade & Exhibition Centre on 27 November 2022.

Anderson was happy to see many HKU FoA alumni amongst them. In particular, there were a few young architects who started their architecture education at ARC's flagship 'Career Discovery in Architecture' Summer Programme.

'It was a pleasure meeting you at the ceremony yesterday,' said alumna Ms Sonia Ho (MARCH 2017), Registered Architect and 'Career Discovery in Architecture' student in 2009. 'I've always wanted to let you know that your words of encouragement have motivated me throughout my pursuit in Architecture. It has made me extra proud and meaningful having you at the ceremony.'





- has been appointed by the HKSAR Government as a board member of the Architects Registration Board (ARB), serving a two-year term from 2022-2024.

More information: <https://www.arb.org.hk/en/about/board?menu=3>

2. DFA Young Design Talent Special Mention Award 2022

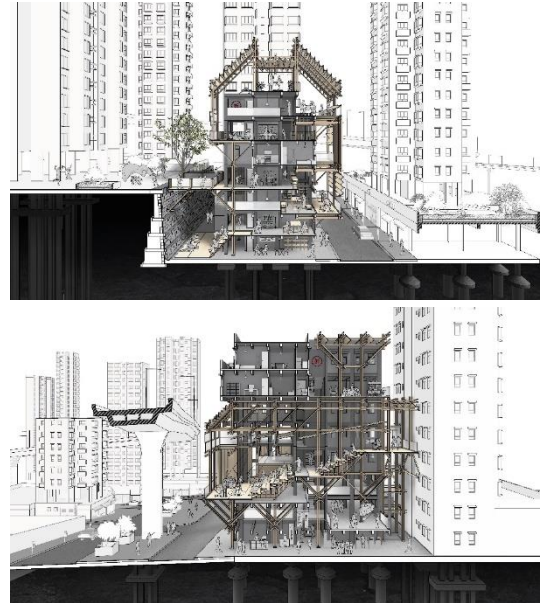
- Alex Cheng Yuk Sing and Jonathan So Cheuk Lam, both MARCH 2022 graduates, won in the Environmental Design category of the DFA Young Design Talent Special Mention Award 2022, with their thesis projects: 'Symbiotic Interaction In Architecture – Between Machinery and Biomimicry' (advisors: [Au Fai](#) and [Ulrich Kirchhoff](#)) and 'Calibrating Obsolescence – Transitional Scaffolding for Urban Redevelopment' (advisors: [Wallace Chang](#) and [Chad Mckee](#)), respectively.

[More from the DFA YDTA Awards website](#)

With this award, Alex aims to contribute to the housing environment in Hong Kong, particularly transitional housing development and modular integrated construction. In his graduation project, 'Symbiotic Interaction in Architecture', water and social infrastructures are combined to develop a new approach to water mitigation measures in Hong Kong.



Johnathan thinks that urban redevelopment should demonstrate inclusiveness and resilience, instead of being a top-down, one-off renewal. His thesis project, 'Transitional Scaffolding for Redevelopment', explores and expands the potential of architectural design to empower disadvantaged communities often overlooked in redevelopment, integrating design expertise and humanitarian concern to encourage cooperation among the government, developers, owners, and residents.



3. 'Post-Covid [] Space' Student Design Competition

- A team led by Yeung Ho Pak, a BA(AS) Year 3 student, won in competition organised by the Hong Kong Institute of Architects (HKIA), with their work 'Post-Covid Isol-lective Space'. The winning proposal was on display in the 'Architecture for People – HKIA 65th Anniversary Exhibition' at Central Market on 1-11 November 2022.



Media Coverage: [設計後疫情共聚空間 港大生奪冠](#)

4. Research Seminar Series, Fall 2022

- Su Chang delivered a seminar titled 'Amphibious Houses' on 24 November 2022, with Dr Zhu Tao as Discussant:

Abstract: *Buildings are grounded. If the geographical conditions are always phase-changing between solid and liquid, how would buildings transform and adapt to these dynamics? This talk revisits our recent research journeys to the villages on Kat O island, one of the largest islands in the northeastern waters of Hong Kong. By looking closely at the village houses and their relationship to the surrounding geographical conditions, we probe the villagers' fluid identities between land and water, their techniques of appropriation in building and living, and propose a dynamic understanding of Hong Kong's coastline communities in relation to the constantly shifting and overlapping socio-political frameworks of the region. The project is led by Su Chang with a team of student assistants from HKU Architecture and supported by a Design Trust seed grant.*



THU 24 NOV 2022

Amphibious Houses

Chang Su
Adjunct Assistant Professor
Department of Architecture

Discussant: Dr. Tao Zhu
Associate Professor
Department of Architecture

Buildings are grounded. If the geographical conditions are always phase-changing between solid and liquid, how would buildings transform and adapt to these dynamics? This talk revisits our recent research journeys to the villages on Kat O island, one of the largest islands in the northeastern waters of Hong Kong. By looking closely at the village houses and their relationship to the surrounding geographical conditions, we probe the villagers' fluid identities between land and water, their techniques of appropriation in building and living, and propose a dynamic understanding of Hong Kong's coastline communities in relation to the constantly shifting and overlapping socio-political frameworks of the region. The project is led by Su Chang with a team of student assistants from HKU Architecture and supported by a Design Trust seed grant.

Su Chang is an adjunct assistant professor at the University of Hong Kong's Department of Architecture. His work explores new forms of public life and their spaces between architecture and geography. The projects envision spatial infrastructures that support future iterations and adaptations, encouraging sustainability, diversity, and participation.

The University of Hong Kong
Department of Architecture
Research Seminar Series
Fall 2022

12:45 — 14:00
K8719, Knowles Building
All reserved are welcome.
Enquiry: knowles@hku.hk

Division of Landscape Architecture

1. Mr Mathew Pryor

- will conduct a workshop together with Ms Lynn H. Lin and Ms Kaia Li, to introduce to participating teachers the concept and use of Curios, an educational metaverse, in facilitating their daily T&L activities.



Date: 19 December 2022 (English) & 20 December 2022 (Cantonese)

Time: 3:00pm – 4:00pm

Venue: RRS 321, 3/F Run Run Shaw Building, Main Campus, HKU

Speakers: Mathew Pryor, Lynn H. Lin, Kaia Li

Registration: [link](https://www.curios.hku.hk)

Curios, as an outcome product in a Virtual Teaching and Learning project*, is now open for teachers and students to use in facilitating their daily curriculum activities. Curios is defined as an Educational Metaverse, aiming to create an immersive, connected, and graphically rich virtual working space for educators, learners, and event organizers. In such environment, working processes and outcomes are made visible; social interactions amongst users are promoted; and game elements are incorporated to engage and motivate users in online activities.

Curios was developed since 2021 and has supported over 2000 users within and outside the University of Hong Kong, including some local schools and NGOs in the past two years. In the coming 2023, Curios team is hoping to collaborate with and benefit more teachers and students and enrich the virtual learning experiences.

In this workshop, the basic concepts, and some teaching practices with the use of Curios will be introduced. Participants will also be able to have hands-on experiences on the features of Curios. All teachers are welcome to join the face-to-face workshop.

More information: <https://www.cetl.hku.hk/workshop-curios-metaverse/>

Curios Metaverse Virtual T&L Project: <https://linktr.ee/curiosmetaverse>

2. Dr Chao Ren

- has published the following papers:

- (i) Ho, J. Y., Shi, Y., Lau, K. K. L., Ng, E. Y. Y., **Ren, C.***, & Goggins, W. B.* (2023). Urban heat island effect-related mortality under extreme heat and non-extreme heat scenarios: A 2010–2019 case study in Hong Kong. *Science of The Total Environment*, 858(1), 159791. ISSN 0048-9697. <https://doi.org/10.1016/j.scitotenv.2022.159791>

Abstract: *The urban heat island (UHI) effect exacerbates the adverse impact of heat on human health. However, while the UHI effect is further intensified during extreme heat events, prior studies have rarely mapped the UHI effect during extreme heat events to assess its direct temperature impact on mortality. This study examined the UHI effect during extreme heat and non-extreme heat scenarios and compared their temperature-mortality associations in Hong Kong from 2010 to 2019. Four urban heat island degree hour (UHIdh) scenarios were mapped onto Hong Kong's tertiary planning units and classified into three levels (Low, Moderate, and High). We assessed the association between temperature and non-external mortality of populations living in each UHIdh level for the extreme heat/non-extreme heat scenarios during the 2010–2019 hot seasons. Our results showed substantial differences between the temperature-mortality associations in the three levels under the UHIdh extreme heat scenario (UHIdh_EH). While there was no evidence of increased mortality in Low UHIdh_EH areas, the mortality risk in Moderate and High UHIdh_EH areas were significantly increased during periods of hot temperature, with the High UHIdh_EH areas displaying almost double the risk (RR: 1.08, 95%CI: 1.03, 1.14 vs. RR: 1.05, 95 % CI: 1.01, 1.09). However, other non-extreme heat UHI scenarios did not demonstrate as prominent of a difference. When stratified by age, the heat effects were found in Moderate and High UHIdh_EH among the elderly aged 75 and above. Our study found a difference in the temperature-mortality associations based on UHI intensity and potential heat vulnerability of populations during extreme heat events. Preventive measures should be taken to mitigate heat especially in urban areas with high UHI intensity during extreme heat events, with particular attention and support for those prone to heat vulnerability, such as the elderly and poorer populations.*

- (ii) Zhou, H., Luo, H., Lau, K. K. L., Qian, X., **Ren, C.**, & Chau, P.* (2022). Predicting Emergency Department Utilization among Older Hong Kong Population in Hot Season: A Machine Learning Approach. *Information*, 13(9), 410. <https://www.mdpi.com/2078-2489/13/9/410>

Abstract: Previous evidence suggests that temperature is associated with the number of emergency department (ED) visits. A predictive system for ED visits, which takes local temperature into account, is therefore needed. This study aimed to compare the predictive performance of various machine learning methods with traditional statistical methods based on temperature variables and develop a daily ED attendance rate predictive model for Hong Kong. We analyzed ED utilization among Hong Kong older adults in May to September from 2000 to 2016. A total of 103 potential predictors were derived from 1- to 14-day lag of ED attendance rate and meteorological and air quality indicators and 0-day lag of holiday indicator and month and day of week indicators. LASSO regression was used to identify the most predictive temperature variables. Decision tree regressor, support vector machine (SVM) regressor, and random forest regressor were trained on the selected optimal predictor combination. Deep neural network (DNN) and gated recurrent unit (GRU) models were performed on the extended predictor combination for the previous 14-day horizon. Maximum ambient temperature was identified as a better predictor in its own value than as an indicator defined by the cutoff. GRU achieved the best predictive accuracy. Deep learning methods, especially the GRU model, outperformed conventional machine learning methods and traditional statistical methods.

- (iii) Hossain, M. P., Zhou, W., **Ren, C.**, Marshall, J., & Yuan, H. Y.* (2022). Prediction of dengue annual incidence using seasonal climate variability in Bangladesh between 2000 and 2018. *PLOS Global Public Health*. <https://doi.org/10.1371/journal.pgph.0000047>

Abstract: The incidence of dengue has increased rapidly in Bangladesh since 2010 with an outbreak in 2018 reaching a historically high number of cases, 10,148. A better understanding of the effects of climate variability before dengue season on the increasing incidence of dengue in Bangladesh can enable early warning of future outbreaks. We developed a generalized linear model to predict the number of annual dengue cases based on monthly minimum temperature, rainfall and sunshine prior to dengue season. Variable selection and leave-one-out cross-validation were performed to identify the best prediction model and to evaluate the model's performance. Our model successfully predicted the largest outbreak in 2018, with 10,077 cases (95% CI: [9,912–10,276]), in addition to smaller outbreaks in five different years (2003, 2006, 2010, 2012 and 2014) and successfully identified the increasing trend in cases between 2010 and 2018. We found that temperature was positively associated with the annual incidence during the late winter

months (between January and March) but negatively associated during the early summer (between April and June). Our results might be suggest an optimal minimum temperature for mosquito growth of 21–23°C. This study has implications for understanding how climate variability has affected recent dengue expansion in neighbours of Bangladesh (such as northern India and Southeast Asia).

- has published the following paper with Professor Peng Gong
- (i) Cai, W., Zhang, C., Zhang, S., Bai, Y., Callaghan, M., Chang, N., Chen, B., Chen, H., Cheng, L., Cui, X., Dai, H., Danna, B., Dong, W., Fan, W., Fang, X., Gao, T., Geng, Y., Guan, D., Hu, Y., Hua, J., Huang, C., Huang, H., Huang, J., Jiang, L., Jiang, Q., Jiang, X., Jin, H., Kiesewetter, G., Liang, L., Lin, B., Lin, H., Liu, H., Liu, Q., Liu, T., Liu, X., Liu, X., Liu, Z., Liu, Z., Lou, S., Lu, C., Luo, Z., Meng, W., Miao, H., **Ren, C.**, Romanello, M., Schöpp, W., Su, J., Tang, X., Wang, C., Wang, Q., Warnecke, L., Wen, S., Winiwarter, W., Xie, Y., Xu, B., Yan, Y., Yang, X., Yao, F., Yu, L., Yuan, J., Zeng, Y., Zhang, J., Zhang, L., Zhang, R., Zhang, S., Zhang, S., Zhao, Q., Zheng, D., Zhou, H., Zhou, J., Fung, M.F.-C.C., Luo, Y., & **Gong, P.** (2022). The 2022 China report of the Lancet Countdown on health and climate change: leveraging climate actions for healthy ageing. *The Lancet Public Health*. DOI: [https://doi.org/10.1016/s2468-2667\(22\)00224-9](https://doi.org/10.1016/s2468-2667(22)00224-9)

The authors of this study are alphabetically ordered for approximately equal contribution. Dr Ren serves as the leader author of WGII.

Abstract: *A health-friendly, climate resilient, and carbon-neutral pathway would deliver major benefits to people's health and wellbeing in China, especially for older populations, while simultaneously promoting high-quality development in the long run. This report is the third China Lancet Countdown report, led by the Lancet Countdown Regional Centre based in Tsinghua University. With the contributions of 73 experts from 23 leading institutions, both within China and globally, this report tracks progress through 27 indicators in the following five domains: (1) climate change impacts, exposure, and vulnerability; (2) adaptation, planning, and resilience for health; (3) mitigation actions and health co-benefits; (4) economics and finance; and (5) public and political engagement. From 2021 to 2022, two new indicators have been added, and methods have been improved for many indicators. Specifically, one of the new indicators measures how heat affects the hours that are safe for outdoor exercise, an indicator of particular relevance given the boom in national sports triggered by the summer and winter Olympics. Findings in this report, which coincide with the UN Framework Convention on Climate Change 27th Conference of the Parties (COP27) hosted in Egypt (where much attention is being focused on adaptation for clinically vulnerable populations), expose the urgency for accelerated adaptation and mitigation efforts to minimise the health impacts of the increasing climate change hazards in China.*

3. Dr Chao Ren and Dr Guangzhao Chen (Post-doctoral Fellow)

- have published the following paper:

Cai, M., **Ren, C.***, Shi, Y., **Chen, G.**, Xie, J., & Ng, E. (2023). Modeling spatiotemporal carbon emissions for two mega-urban regions in China using urban form and panel data analysis. *Science of The Total Environment*, 857(3), 159612. <https://doi.org/10.1016/j.scitotenv.2022.159612>

Abstract: *Spatiotemporal monitoring of urban CO₂ emissions is crucial for developing strategies and actions to mitigate climate change. However, most spatiotemporal inventories do not adopt urban form data and have a coarse resolution of over 1 km, which limits their implications in intra-city planning. This study aims to model the spatiotemporal carbon emissions of the two largest mega-urban regions in China, the Yangtze River Delta and the Pearl River Delta, using urban form data from the Local Climate Zone scheme and landscape metrics, nighttime light images, and a year-fixed effects model at a fine resolution from 2012 to 2016. The panel data model has an R² value of 0.98. This study identifies an overall fall in carbon emissions in both regions since 2012 and a slight elevation of emissions from 2015 to 2016. In addition, urban compaction and integrated natural landscapes are found to be related to low emissions, whereas scattered low-rise buildings are associated with rising carbon emissions. Furthermore, this study more accurately extracts urban areas and can more clearly identify intra-urban variations in carbon emissions than other datasets. The open data supported methodology, regression models, and results can provide accurate and quantifiable evidence at the community level for achieving a carbon-neutral built environment.*

4. Dr Chao Ren and Dr Shi Yin (Post-doctoral Fellow)

- have published the following paper:

Yin, S., Ren, C.*, Shi, Y., Hua, J., Yuan, H. Y., & Tian, L. W. (2022). A Systematic Review on Modeling Methods and Influential Factors for Mapping Dengue-Related Risk in Urban Settings. *International Journal of Environmental Research and Public Health*, 19(22), 15265. <https://www.mdpi.com/1660-4601/19/22/15265>

Abstract: *Dengue fever is an acute mosquito-borne disease that mostly spreads within urban or semi-urban areas in warm climate zones. The dengue-related risk map is one of the most practical tools for executing effective control policies, breaking the transmission chain, and preventing disease outbreaks. Mapping risk at a small scale, such as at an urban level, can demonstrate the spatial heterogeneities in complicated built environments. This review aims to summarize state-of-the-art modeling methods and influential factors in mapping dengue fever risk in urban settings. Data were manually extracted from five major academic search databases following a set of querying and selection*

criteria, and a total of 28 studies were analyzed. Twenty of the selected papers investigated the spatial pattern of dengue risk by epidemic data, whereas the remaining eight papers developed an entomological risk map as a proxy for potential dengue burden in cities or agglomerated urban regions. The key findings included: (1) Big data sources and emerging data-mining techniques are innovatively employed for detecting hot spots of dengue-related burden in the urban context; (2) Bayesian approaches and machine learning algorithms have become more popular as spatial modeling tools for predicting the distribution of dengue incidence and mosquito presence; (3) Climatic and built environmental variables are the most common factors in making predictions, though the effects of these factors vary with the mosquito species; (4) Socio-economic data may be a better representation of the huge heterogeneity of risk or vulnerability spatial distribution on an urban scale. In conclusion, for spatially assessing dengue-related risk in an urban context, data availability and the purpose for mapping determine the analytical approaches and modeling methods used. To enhance the reliabilities of predictive models, sufficient data about dengue serotyping, socio-economic status, and spatial connectivity may be more important for mapping dengue-related risk in urban settings for future studies.

Department of Real Estate and Construction

1. BSc(Surveying) Final Year Studio Exhibition

- was held on 23 November 2022, during which BSc(Surveying) students shared their ideas on developing the Northern Metropolis from different perspectives, including land resumption, technology adoption, financing strategies, and planning for a sustainable, livable community. They wore traditional costumes and used mini games, role-playing, and VR technology to interact with guests from the industry and academia.



2. Research Seminar Series

- Professor Jian Zuo, Professor in Sustainable Construction at the School of Architecture and Built Environment, The University of Adelaide, was invited to present his research on 'Effectiveness of Solid Waste Management Policies in Australia: An Exploratory Study' on 23 November 2022 via ZOOM.

Abstract: *Many countries have attempted to manage the local solid waste via policies as one of the main means to improve the recycling rate. However, it is difficult to measure the effectiveness of policies due to complex social environment or high requirements of data collection. The repeated measures analysis of variance method is innovatively employed in this study to analyze the effectiveness of Australia's solid waste policy. This study revealed that repeated measures analysis of variance can effectively assess the effectiveness of policies with different start times. This method has low data requirements and is beneficial for assessing policies with complex conditions. Using Australia as an example, the effectiveness of four waste recycling policies was analyzed in this study. The results showed that regions with combination policies outperform in improving solid waste recycling rates. By contrast, regions without any policy implementation showed a declining trajectory in recycling rates.*

THE UNIVERSITY OF HONG KONG 香港大學
faculty of architecture 建築學院
Department of Real Estate and Construction
房地產管理系

REC Research Seminar Series

SPEAKER:
Prof Jian ZUO
Professor
School of Architecture and Built Environment
The University of Adelaide

HKURBAN labs

Scan to register

Prof Jian Zuo is a Professor in Sustainable Construction at the School of Architecture and Built Environment, The University of Adelaide. His main research interests are related to sustainable built environment via both technical (e.g. smart technologies) and managerial (e.g. policy intervention and behavioural change) means. In particular, he has undertaken extensive research in construction and demolition waste recycling and management. As the lead researcher, he has involved in a series of competitive grants in Australia such as Discovery Projects and Linkage Projects funded by the Australian Research Council as well as many other national key projects. He has long been engaged in the study of ecological towns, green buildings and sustainable development of the construction industry. Published more than 100 papers in top journals, including more than 80 journal papers indexed by SCI and SSCI, Google Scholar indexed more than 15,000, and the H-index is 67.

Effectiveness of Solid Waste Management Policies in Australia: An Exploratory Study

ABSTRACT NOV 23, 2022 (WED) 4:30 – 6 pm (HKT) zoom

Many countries have attempted to manage the local solid waste via policies as one of the main means to improve the recycling rate. However, it is difficult to measure the effectiveness of policies due to complex social environment or high requirements of data collection. The repeated measures analysis of variance method is innovatively employed in this study to analyze the effectiveness of Australia's solid waste policy. This study revealed that repeated measures analysis of variance can effectively assess the effectiveness of policies with different start times. This method has low data requirements and is beneficial for assessing policies with complex conditions. Using Australia as an example, the effectiveness of four waste recycling policies was analyzed in this study. The results showed that regions with combination policies outperform in improving solid waste recycling rates. By contrast, regions without any policy implementation showed a declining trajectory in recycling rates.

3. Professor Kelvin Wong

- was invited to attend the Royal Institution of Chartered Surveyors (HK) 2021-22 Scholarship Ceremony, with the following awardees from the Department and Faculty:



Name of Student	Curriculum	Award
Mr Chan Cheuk Yi	BSc(Surv)	HK\$5,000
Mr Cheng Sung Hei Alex	Year 2	HK\$1,000
Mr Yau Pak Ho Paco		HK\$1,000
Mr Li Kwan Ho		HK\$1,000
Mr Chu Ka Chun		HK\$5,000
Miss Lo Sum Yin Silviane	BA(Conservation) Year 2	HK\$5,000
Mr Ching Chun Hei	MSc(ConstProjectMan) Final Year (Full-time)	HK\$2,000
Miss Ng Sophie Yin Hei	MSc(ConstProjectMan) Final Year (Part-time)	HK\$2,000
Mr Wang Ruiyang	MSc(RealEst) Final Year (Full-time)	HK\$2,000
Miss Tang Tsz Wai	MSc(RealEst) Final Year (Full-time)	HK\$1,000
Miss Chu Siu Sze Cecilia	MSc(RealEst) Final Year (Part-time)	HK\$2,000
Mr Chan Yuk Hei	MSc(RealEst) Final Year (Part-time)	HK\$1,000
Mr Hu Tianyu	MSc(IPD) Final Year (Part-time)	HK\$2,000

Department of Urban Planning and Development

1. MUP Community Engagement Activities

- were organised by MSc in Urban Planning Year 2 students in September and October 2022, under the guidance of Professor Bo-sin Tang, Dr Jiangping Zhou and Mr Roger Tang. The activities included roadshow, on-site/on-line questionnaire surveys, and social media postings, on the strategic positioning of Kennedy Town and Mount Davies in view of the future railway and road connections from Hong Kong Island West to Kau Yi Chau Artificial Islands, as part of the Lantau Tomorrow Vision. The finale of the activities was a Strategic and Community Planning Workshop held at St. Paul's College on Bonham Road on 19 November 2022, to formulate district development plans in order to achieve a carbon neutral and green community. Over 80 participants including local residents, professionals, academics, government officials and students attended the Workshop with positive feedback.



2. Dr Tianren Yang

- received [2022 ISOCARP Gerd Albers Award \(Best Article\)](#) for the following co-authored paper:

Yang, T., Pan, H., Zhang, X., Greenlee, A., & Deal, B. (2021). How neighborhood conditions and policy incentives affect relocation outcomes of households from low-income neighborhoods – Evidence from intra-city movement trajectories. *Cities*, 119, 103415. <https://doi.org/10.1016/j.cities.2021.103415>

Abstract: *This paper examines residential mobility patterns of households living in low-income neighborhoods, paying close attention to the neighborhood characteristics that influence their mobility. Using several million records of household-level datasets for address change trajectories in the Chicago metropolitan area, this paper explores the relationship among movers and the associated neighborhood-level income differences between origin and destination locations, to interpret which households from low-income neighborhoods can use residential mobility to move up to more neighborhood conditions result in residential mobility outcomes to favorable neighborhood conditions and potentially end the cycle of poverty. This research finds the positive prospects for low-income neighborhood households to move up, while the characteristics (e.g., racial composition) of origin and destination neighborhoods play a significant role in relocation outcomes. In addition, housing mobility programs can have various impacts on households moving from neighborhoods of different income levels. Policymakers should be aware of the diverse needs of households in extremely low-income neighborhoods (less concentrated housing assistance) and in very low-income neighborhoods (public housing) that can help them move out of concentrated poverty and move up to neighborhoods with higher income spectrums.*

- served as a juror for the [International Society of City and Regional Planners \(ISOCARP\) Student Award 2022](#).

3. Dr Chinmoy Sarkar

- has been conferred an honorary membership of the Department of Psychiatry at the University of Oxford for a period of three years until 31 October 2025.

4. Professor Anthony Yeh

- has been elected as a member of the Board of Directors of the Hong Kong Academy of Sciences in its Annual General Meeting on 29 November 2022.

5. Professor Shenjing He

- was invited to join the [Hong Kong Housing Society \(HKHS\)](#) as a member, and participated in its annual brainstorming session on 15 November 2022.

Centre of Urban Studies and Urban Planning

1. Mr Alain Chiaradia

- was invited to speak at the webinar: 'Retrospect and Prospect: Elements of Healthy City', organised by the Hong Kong Institute of Urban Design (HKIUD) and GBA Urban Designer Alliance on 20 October 2022, as part of the GBA Urban Design Award Webinar Series. In the webinar, Alain delineated an ex-post evaluation of three HKIUD urban design award-winning projects using a three-pronged framework, conceptualising urban design and placemaking values beyond the usual value in exchange and value in use, to also include a set of values in commons that are usually seen as intangibles. He suggested that the way we evaluate the contribution of urban design and placemaking to a healthy city needs to shift to a better accounting that captures the structural transition to healthy eco-systems.

More than 300 professionals joined this webinar, including architects, planners, surveyors and urban designers. Their active participation throughout the panel discussion provided a valuable source of ideas, examples, and references.



- [Event Webpage](#)
- [Watch the Webinar](#)

- was invited to present the paper: 'Geometric Intelligence – Estimating Wider Economic Impacts of Transport Infrastructure Investment' at the 6th IEEE International Conference on Universal Village (IEEE UV2022), in Boston, 22-25 October 2022, Sessions 1A&1B: 'Vision for Universal Village and UV Indices' and 'Development Status of Universal Village'.

IEEE UV2022 explored systematic methodologies for improving the quality of life. It was co-sponsored by the IEEE Intelligent Transportation Systems Society.



○ [Event Website](#)

2. Professor Anthony Yeh

- was invited to present a paper on 'Making Smart Cities Smarter' in the 2022 Greater Bay Area Smart City Academicians Forum (大灣區智慧城市院士論壇) on 14 November 2022, organised by the Chinese Academy of Engineering, Guangdong Academicians Association, Innovation Technology Commission of the Shenzhen Government, Shenzhen University and Shenzhen Smart City Technology Development Limited.



3. Dr Si Qiao (PhD 2022), Mr Guan Huang (PhD student) and Professor Anthony Yeh

- have published the following paper:

Qiao, S., Huang, G., & Yeh, A. G.-O. (2023). Who are the gig workers? Evidence from mapping the residential locations of ride-hailing drivers by a big data approach, *Cities*, 132, 104112. <https://doi.org/10.1016/j.cities.2022.104112>

Abstract: *One of the challenges faced in understanding platform gig work is who are the gig workers involved in this novelty labour relationship. We attempt to answer it by using mobile phone trajectories to map the residential locations of gig drivers in the ride-hailing platform economy in Chengdu, China. Then, we reconstruct the relationships between the spatial structure of the ride-hailing drivers and their neighbourhood-level sociodemographic characteristics and residential built environments. We found that ride-hailing drivers are more likely to come from neighbourhoods with lower-income and less regular job opportunities. Their residences formed living clusters with urban villages, resettlement houses, and shanty towns. Our study suggests that ride-hailing platforms do not liberate gig workers from the structural rural-urban disparities but form a continuation of the structural barriers and discrimination in the division of labour, even if the technological innovation discourse in the platform economy argues that the gig driving can attract the well-educated and other minorities.*

Future Urbanity and Sustainable Environment Lab

1. Dr Binley Chen

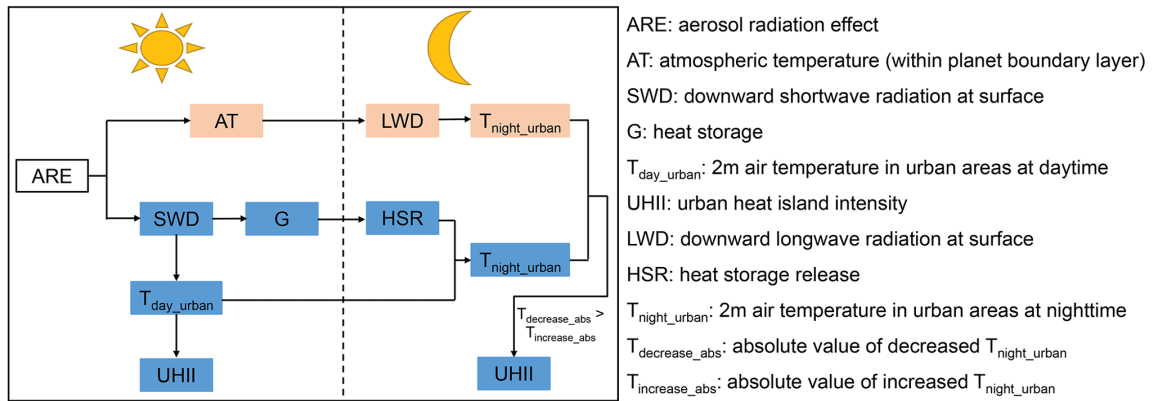
- has received a grant from the Natural Science Fund of Guangdong Province, offered by the Guangdong Science and Technology Department, for his project: 'Long-term Dynamic Monitoring of Land-sea Interface (LSI) in Greater Bay Area Using Remote Sensing Big Data'.

Abstract: Land-sea Interface (LSI), generally referred to as coastal areas, is among the most productive ecosystems, providing considerable social-ecological services and its status is of vital importance in multiple respects. There is an urgent need to better understand human-environment interactions within those vulnerable LSI areas and prioritize the balance between conservation and development on the coast. Addressing this challenge, the proposed project aims to achieve long-term dynamic monitoring of LSI in Greater Bay Area using remote sensing big data and advanced change detection methods, with the following two key objectives: (1) construct an automatic labeling method for long-term coastal land cover samples to realize efficient collection of high-quality samples and provide sample support for mapping research on coastal land cover change; and (2) combine multi-source remote sensing data fusion with change detection methods to establish the annual LSI dataset for the Guangdong-Hong Kong-Macao Greater Bay Area from 1985 to 2022, and provide a technical framework for long-term accurate mapping of coastal land cover changes.

- has published the following paper:

Wang, F., Carmichael, G. R., Wang, J., **Chen, B.**, Huang, B., Li, Y., Yang, Y., & Gao, M. (2022). Circulation-regulated impacts of aerosol pollution on urban heat island in Beijing. *Atmospheric Chemistry and Physics*, 22(20), 13341–13353. <https://doi.org/10.5194/acp-22-13341-2022>

Abstract: Unprecedented urbanization in China has led to serious urban heat island (UHI) issues, exerting intense heat stress on urban residents. Based on the observed temperature and PM_{2.5} concentrations in Beijing over 2016–2020, we find diverse influences of aerosol pollution on urban heat island intensity (UHII) under different circulations. When northerly winds are prevalent in urban Beijing, UHII tends to be much higher in both daytime and nighttime and it is less affected by aerosol concentrations. However, when southerly and westerly winds are dominant in rural Beijing, UHII is significantly reduced by aerosol pollution. Using coupled aerosol-radiation weather simulations, we demonstrate the underlying physical mechanism which is associated with local circulation and resulting spatial distribution of aerosols. Our results also highlight the role of black carbon in aggravating UHI, especially during nighttime. It could thus be targeted for cooperative management of heat islands and aerosol pollution.



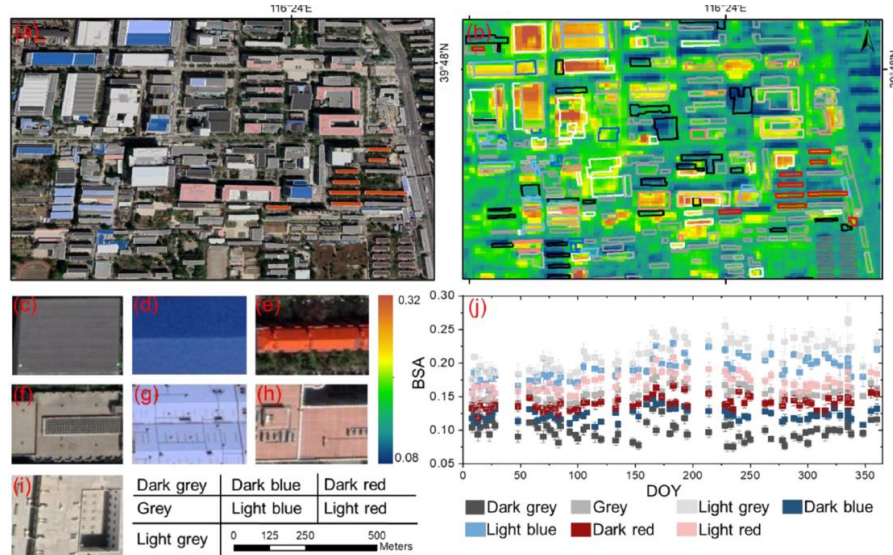
2. Dr Shengbiao Wu (Post-doctoral Fellow, DLA) and Dr Binley Chen

- have published the following paper:

Lin, X., **Wu, S.***, **Chen, B.**, Lin, Z., Yan, Z., Chen, X., Yin, G., You, D., Wen, J., Liu, Q., Xiao, Q., Liu, Q., & Laforтеzza, R. (2022). Estimating 10-m land surface albedo from Sentinel-2 satellite observations using a direct estimation approach with Google Earth Engine. *ISPRS Journal of Photogrammetry and Remote Sensing*, 194, 1-20. <https://doi.org/10.1016/j.isprsjprs.2022.09.016>

Abstract: Land surface albedo plays an important role in controlling the surface energy budget and regulating the biophysical processes of natural dynamics and anthropogenic activities. Satellite remote sensing is the only practical approach to estimate surface albedo at regional and global scales. It nevertheless remains challenging for current satellites to capture fine-scale albedo variations due to their coarse spatial resolutions from tens to hundreds of meters. The emerging Sentinel-2 satellites, with a high spatial resolution of 10 m and an approximate 5-day revisiting cycle, provide a promising solution to address these observational limitations, yet their potentials remain underexplored. In this study, we integrated the Sentinel-2 observations with an updated direct estimation approach to improve the estimation and monitoring of fine-scale surface albedo. To enable the capability of the direct estimation approach at a 10-m scale, we combined the 10-m resolution European Space Agency (ESA) WorldCover land cover data and the 500-m resolution Moderate-Resolution Imaging Spectroradiometer (MODIS) Bidirectional Reflectance Distribution Function (BRDF)/albedo product to build a high-quality and representative BRDF training database. To evaluate our approach, we proposed an integrated evaluation framework leveraging 3-D physical model simulations, ground measurements, and satellite observations. Specifically, we first simulated a comprehensive dataset of Sentinel-2-like surface reflectance and broadband albedo across a variety of geometric configurations using the MODIS BRDF training samples. With this dataset, we built the Look-Up-Tables (LUTs) that connect surface broadband albedo and Sentinel-2 reflectance through a direct angular

bin-based linear regression approach, and further coupled these LUTs with the Google Earth Engine (GEE) cloud-computing platform. We next evaluated the proposed algorithm at two spatial levels: (1) 10-m scale for absolute accuracy assessment using the references from the Discrete Anisotropic Radiative Transfer (DART) simulations and flux-site observations, and (2) 500-m scale for large-scale mapping assessment by comparing the estimated albedo with the MODIS albedo product. Lastly, we presented four examples to show the capability of Sentinel-2 albedo in detecting fine-scale characteristics of vegetation and urban covers. Results show that: (1) the proposed algorithm accurately estimates surface albedo from Sentinel-2-like reflectance across different landscape configurations (overall root-mean-square-error (RMSE) = 0.018, bias = 0.005, and coefficient of determination (R^2) = 0.88); (2) the Sentinel-2-derived surface albedo agrees well with ground measurements (overall RMSE = 0.030, bias = -0.004, and R^2 = 0.94) and MODIS products (overall RMSE = 0.030, bias = 0.021, and R^2 = 0.97); and (3) Sentinel-2-derived albedo accurately captures seasonal leaf phenology and rapid snow events, and detects the interspecific (or interclass) variations of tree species and colored urban rooftops. These results demonstrate the capability of the proposed approach to map high-resolution surface albedo from Sentinel-2 satellites over large spatial and temporal contexts, suggesting the potential of using such fine-scale datasets to improve our understanding of albedo-related biophysical processes in the coupled human-environment system.

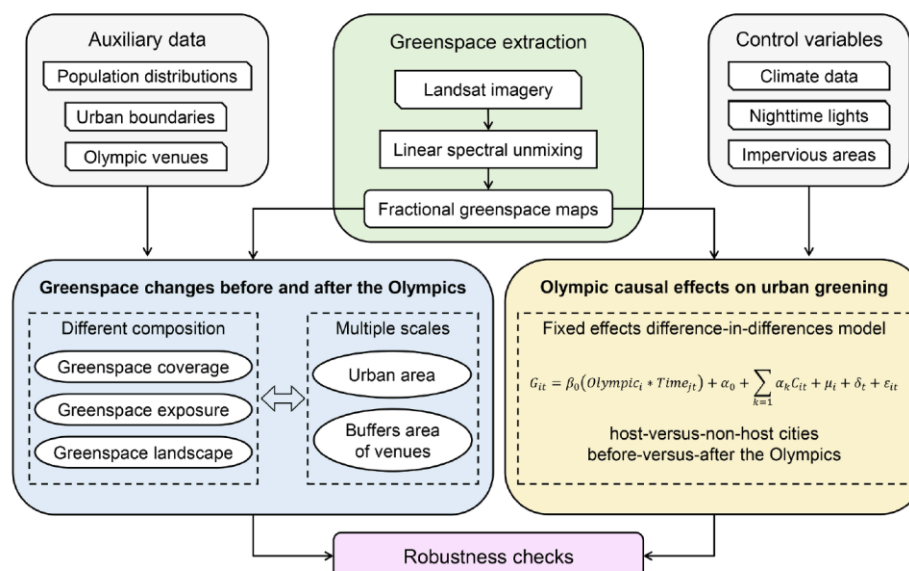


3. Ms Ying Tu (Research Assistant, DLA) and Dr Binley Chen

- have published the following paper:

Tu, Y., Chen, B. *, Yang, J. & Xu, B. (2023). Olympic effects on reshaping urban greenspace of host cities. *Landscape and Urban Planning*, 230, 104615. <https://doi.org/10.1016/j.landurbplan.2022.104615>

Abstract: *The Olympic Games are one of the most influential mega-events worldwide, yet little is known about the extent how these events transform the physical appearance of urban greenspaces. To fill this knowledge gap, we use time-series satellite images to map annual greenspace distribution across eight host cities of the Summer Olympics between 1988 and 2016, and quantify changes in greenspace coverage, exposure, and landscape before and after the games. By further applying a difference-in-differences model, we unravel the underlying causal impacts of Olympic Games on urban greening. Results show that Olympic Games not only promote overall increases in greenspace coverage but also enhance people's ambient exposure to greenspace, of which the influencing magnitude is more evident nearby Olympic venues and the associated buffers. We also find urban greenspace landscape generally becomes more irregular and disaggregated after the Games. Statistically, Olympic-associated urban modifications directly contribute to a 3.41 % increment in greenspace coverage within the urban extent ($p < 0.01$). Our findings indicate the widespread Olympic effects on reshaping urban greenspaces, which provide new insights on maintaining Olympic sustainability and facilitating green city development.*



4. Dr Binley Chen and Dean Webster

- have the following paper accepted for publication:

Chen, B., & Webster, C. (2022). Eight Reflections on Quantitative Studies of Urban Green Space: A Mapping-Monitoring-Modeling-Management (4M) Perspective. *Landscape Architecture Frontiers*.

Abstract: *Green space is an important component in urban environment, providing considerable ecosystem services to our socio-economic-cultural activities. Metrics designed to capture green space provision, supply and demand, measuring availability, accessibility, and visibility have been widely adopted to gauge progress toward achieving sustainable development goals from local to regional scales. In this article, we offer eight reflections on quantitative studies of urban green space for mapping, monitoring, modeling, and management (4M) practices in landscape design and planning. The article's objective is to stimulate fresh and innovative thinking in the conversion of data to interventions. Eight points are made: 1) Green space mapping should be characterized in a multi-attribute conceptual model, including quantity, quality, type, and structure; 2) green space mapping sources, methods, and uses vary by definitions, approaches, and scales; 3) phenology modifies seasonal quality and quantity of urban green space; 4) spatial and temporal green space data cubes will help realize the goal of near real-time monitoring of urban green space change; 5) green space coverage reveals green space supply, but green space exposure can capture effective demand via modeling the supply–demand relationships of human–green space; 6) green space exposure measures should account for spatial, temporal, and social differences; 7) greening optimization by landscape architects and planners should consider both biophysical, biodiversity, and health benefits; and 8) urban green space management should be strategized with a long-term view. Finally, we advocate data–science–decision support systems that can help guide and promote 4M practices of urban green space. These points of reflection have broad implications for research, practice, and theory of urban green landscape design, planning, and management, and altogether constitute a set of principles that can guide scientists, policy makers, and practitioners toward strategizing optimal 4M of urban green space.*

Healthy High Density Cities Lab

1. Ms Yvonne Lai Ka Yan, Dean Chris Webster, Ms Sarika Kumari and Dr Chinmoy Sarkar
 - have published the following abstract co-authored with Professor John Gallacher (Department of Psychiatry, University of Oxford):

Lai, K. Y., Webster, C., Kumari, S., Gallacher, J. E. J., & Sarkar, C. (2022). Association between individual-level socioeconomic position and incident dementia using UK Biobank data: a prospective study. *The Lancet*, 400 (S56). [https://doi.org/10.1016/S0140-6736\(22\)02266-8](https://doi.org/10.1016/S0140-6736(22)02266-8)

Background: Under-education and living in poverty are known risk factors for dementia. However, single-variable makers of socioeconomic position (SEP) are often correlated and cannot reflect the overall SEP. We examined association between composite SEP and incident dementia using UK-wide data.

1. Hong Kong ICT Smart Logistics Gold Award

- The Remote e-Inspection System for Cross Border MiC Logistics developed by Professor Wilson Lu, together with Professor Anthony Yeh, Chair Professor of the Department of Urban Planning and Design, and Ir K.L. Tam, Director of the Estates Office of the University, won the 2022 Hong Kong ICT Smart Logistics Gold Award. The Award Presentation Ceremony was held at the Hong Kong Convention and Exhibition Centre on 16 November 2022.



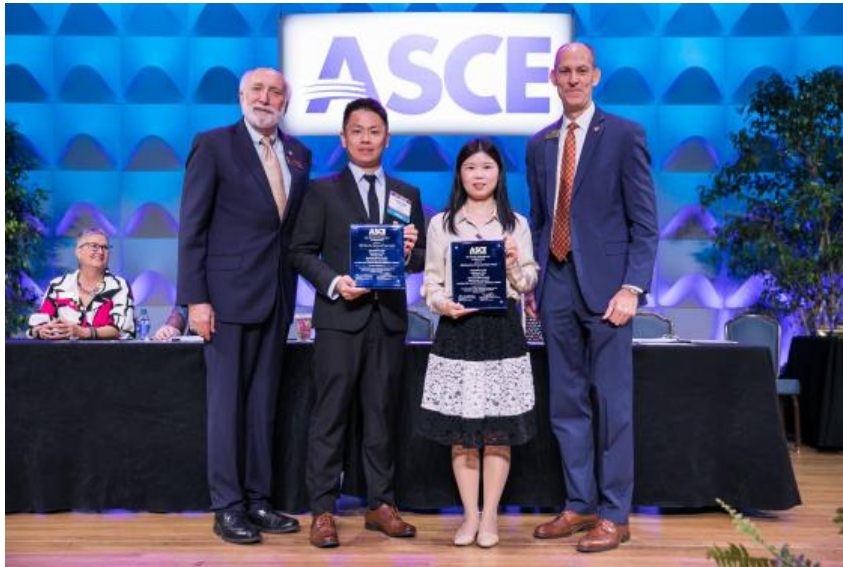
(From left) Professor Anthony Yeh (Chair Professor, Department of Urban Planning and Design), Professor Wilson Lu (Director, iLab, Faculty of Architecture), Ms Anna Lin (Chief Executive, GS1 Hong Kong, Leading Organiser), Ir K.L. Tam (Director, Estates Office), and Mr James H.W. Lee (CEO, Paul Y. Engineering Group Ltd)

Selected Media Coverage:

- [港大建築模塊物流檢測系統獲獎](#)
- [港大遙距電子檢測系統 奪智慧物流金獎](#)
- [跨境組裝合成建築模塊物流遙距檢測系統 港大研發獲獎](#)
- [2022 香港資訊及通訊科技獎「智慧出行獎」結果出爐 自助生物特徵識別系統勇奪「智慧出行大獎」殊榮](#)
- [Hong Kong ICT Awards 2022– Smart Mobility Award Winners Unveiled Smart Mobility Grand Award Goes to Self-service Biometric Identification System](#)

2. ASCE JME Best Paper Award

- The iLab team led by Professor Wilson Lu, Dr Frank Xue, as well as authors including Mr Liupengfei Wu, Mr Rui Zhao, Dr Jinying Xu and Dr Xiao Li, won the ASCE Journal of Management in Engineering (JME) Best Peer Reviewed Paper Award for 2022. Their award-winning paper titled '[Using blockchain to improve information sharing accuracy in the onsite assembly of modular construction](#)' provides an innovative blockchain-based concept model for sharing accurate information among stakeholders. An award presentation ceremony was held during the ASCE Annual Convention, in the US from 23 to 26 October 2022. Mr Wu and Dr Xu attended the ceremony and represented the team to receive the Award.



Mr Liupengfei Wu and Dr Jinying Xu receive the Best Paper Award on behalf of the iLab team, from the ASCE 2022 President Mr Dennis Truax (retired) and ASCE Executive Director Thomas W. Smith III

Ronald Coase Centre for Property Rights Research

1. Professor Lawrence Lai

- has published the following article with Honorary Professor Frank Lorne:

Lai, L. W. C., Lorne, F. T., Purmehdi, M., Grozdanic, K., Aldad, A., Joshua, T. G., Ling, H., Chi, H., Sabaini, M. M., Yan, S., & Lai, M. (2022). Walk and chew gum: A demand and supply illustration of macro and micro net-zero initiatives for the automobile industry. *Sustainable Production and Consumption*. <https://doi.org/10.1016/j.spc.2022.11.006>

Abstract: *This paper draws upon several related perspectives not necessarily following a single assumed methodology in addressing climate changes issues for the automobile industry. It utilizes economists' simple demand and supply tools in illustrating how net-zero initiatives can be considered from a "micro" as well as a "macro" perspective. Drawing this distinction can illustrate a difference between green car and green certificate initiatives for an agenda for the industry's drive to net zero. Macro net-zero is almost universally agreed and implemented in many industries of the world including the automobile industry. A pragmatic approach for micro net-zero arguably may be additionally needed, as we are likely to see fossil fuel driven vehicles coexisting with alternative energy vehicles during an unavoidable transitory phase-out period. As an illustration of benchmark carbon pricing method, a CO₂ auditing exercise is conducted based on specific car information retrieved from the US Department of Energy dataset. We found under quite reasonable assumptions, green certificate fee calculated specific to a new car in dealership showroom would not be high in absolute as well as in percentage term compared to the price of the car. Furthermore, if green fees can be monitored to be spent on tree planting agencies, an acreage-tree equivalent of the green fee can also be calculated, thus enabling the pricing mechanism to be integrated with green marketing. The importance of marketing as a means to privatize a Pigouvian tax is recommended, pointing out the notion of augmented product inclusive of a green certificate for vehicles may contribute to net-zero. The proposed framework stated in the context of integrated perspectives can be useful for static efficiency while also noting the limitation of market economics towards contributing to dynamic efficiency, which is currently going through a process of Schumpeterian competition. The framework helps clarify energy policy issues that have now mixed discussions of old (i.e., fossil fuel) and new technology (i.e., alternative energy). This micro net zero perspective may not be limited to the automobile industry.*

Keywords: *Micro net zero; Pigouvian tax; Coasian economics; Schumpeterian competition; CO₂ auditing; Augmented product*

2. Professor K.W. Chau and Professor Lawrence Lai

- have served as editors of *Surveying & Built Environment* (Volume 31, Issue 2), published by the Hong Kong Institute of Surveyors (HKIS), with PhD student Nixon Leung as Editorial Assistant. The journal features articles by Professor Lai, Professor Stephen Davies, PhD students Vincent Chan and Nixon Leung, and Teaching Assistant Y.K. Tan. Its electronic version can be accessed on the [HKIS website](http://www.hkis.org.hk).



Social Infrastructure for Equity and Wellbeing Lab

1. Ms Chenxi Li (PhD student), Dr Jin Zhu and Professor Shenjing He

- have published the following paper:

Li, C., Zhu, J., & He, S. (2023). Panacea or Pandora's Box? An institutional analysis of the contested long-term rental apartments development in China. *Habitat International*, 131, 102715. <https://doi.org/10.1016/j.habitatint.2022.102715>.

Abstract: *The dramatic growth of long-term rental apartments (LRAs) in China's megacities since 2015, spurred by a series of state policies encouraging the development of the private rental sector (PRS), has culminated in many LRA firms encountering capital chain rupture and even going bankrupt within a short period. As a result, thousands of tenants were rendered homeless and many property owners were left unpaid. The present study analyses the boom and bust of LRA development in China under housing financialisation and explores the relationship between the transformative institutions – characterised by policy deregulation/re-regulation – and market performance stimulated by capital speculation. The findings of this study reveal the institutional changes in China's PRS to have been closely linked to the socio-economic changes emanated from endogenous opportunism and exogenous shocks. Specifically, the policy drift in the PRS was closely associated with deregulation and capital speculation, while policy layering was employed to institutionalise, regulate and legalise the PRS, thus mitigating the housing shortage crisis and ensuring the retention of social stability. Adapting to the volatile politico-economic circumstances as a form of punctuated equilibrium, policies governing the PRS require constant assessment and reflection to safeguard people's basic housing rights.*