

RGC Ref. No.: <u>UGC/IIDS15/E01/19</u> (please insert ref. above)
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**RESEARCH GRANTS COUNCIL  
COMPETITIVE RESEARCH FUNDING SCHEMES FOR  
THE LOCAL SELF-FINANCING DEGREE SECTOR**

**INTER-INSTITUTIONAL DEVELOPMENT SCHEME (IIDS)**

**Completion Report**  
(for completed projects only)

<p><b><u>Submission Deadlines:</u></b></p> <ol style="list-style-type: none"> <li>1. The unspent balance, if applicable, and auditor's report: within <b>six</b> months of the approved project completion date.</li> <li>2. Completion report: within <b>12</b> months of the approved project completion date.</li> </ol>
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**Part A: The Project and Investigator(s)**

**1. Project Title**

State of the art research in artificial intelligence and ubiquitous city

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**2. Investigator(s) and Academic Department(s) / Unit(s) Involved**

<b>Research Team</b>	<b>Name / Post</b>	<b>Unit / Department / Institution</b>
Principal Investigator	LI, Rita Yi-man / Director / Associate Professor	Sustainable Real Estate Research Center / Department of Economics and Finance / Hong Kong Shue Yan University
Co-Principal Investigator(s)	N/A	N/A
Co-Investigator(s)	CHAU, Kwong-wing / Chair Professor	Department of Real Estate and Construction, the University of Hong Kong
	HO, Daniel Chi-wing / Professor	Faculty of Design and Environment, the Technological and Higher Education Institute of Hong Kong
Others	N/A	N/A

**3. Project Duration**

	<b>Original</b>	<b>Revised</b>	<b>Date of RGC / Institution Approval (must be quoted)</b>
Project Start Date	1 January 2020	N/A	N/A
Project Completion Date	31 December 2020	N/A	N/A
Duration ( <i>in month</i> )	12 months	N/A	N/A
Deadline for Submission of Completion Report	31 December 2021	N/A	N/A

**Part B: The Final Report****5. Collaboration with Other Self-Financing Degree-Awarding Institutions**

	<b>Name of Institution(s)</b>	<b>% of Participation</b>	<b>Distinctive <u>Element(s)</u> of the Institution in Responsible Project</b>
<b>Applying Institution</b>	Hong Kong Shue Yan University	70	Invite participants, promotion, liaise with speakers, issues certificates to participants etc
<b>Collaborating Institution(s) (If any) #</b>	The University of Hong Kong	0	Invite participants and promotion
	Technological and Higher Education Institute of Hong Kong	30	Invite participants and promotion
<b>Total:</b>		<b>100</b>	

# *If no other eligible local self-financing degree-awarding institutions are involved, please input "N/A" in this table.*

**6. Project Objectives****6.1 Objectives as per original application**

1. keep abreast of the latest development trends, prospects and challenges in AI and u-city.
2. identify various AI and ubiquitous tools that can be used in research projects;
3. review the current state of art applications of AI for u-city.

**6.2 Revised objectives**

Date of approval from the RGC: N/A

Reasons for the change: N/A

1. N/A

2.

3. ....

**6.3 Realisation of the objectives**

*(Maximum 1 page; please state how and to what extent the project objectives have been achieved; give reasons for under-achievements and outline attempts to overcome problems, if any).*

**Objective 1: keep abreast of the latest development trends, prospects and challenges in AI and u-city**

Professor Dignum mentioned that AI identifies patterns in images, text and video data, extrapolating patterns, and acting based on the pattern. Prof Beecham mentioned that the Aquawatch Australia mission includes sensor monitoring, hydrological network mapping, complex data fusion for water-related operational decisions. Prof George Boutrass recommended the First Responder App as a valuable tool for safety management. It allows users to report emergency events; the central operator then informs the first responders to accept the call and direct to the event using Google Maps. To monitor work hazards using electronic systems, sensors are used in the workplace and the employee's clothes. All these allow us to obtain more data for analysis and minimise occupational safety and health (OSH) risks. Professor Yigitcanlar illustrated how AI could contribute to the ubiquitous city from several dimensions, including economy, society, environment, and government.

Prof George Boutrass suggested three types of OSH challenges in human-robot-environment interactions: 1) Robot-human collision risks: machine learning can lead to unpredictable robot behaviour. 2) Security risks: robots' internet links can affect the integrity of software programming, leading to vulnerabilities in security. 3) Environmental risks: sensor degradation and unexpected human action in unstructured environments may cause risks to the environment. Prof Mark Fox said the fidelity of its knowledge representation limits the level of intelligence that can be achieved by a piece of software. Prof John Macintyre suggested that there are risks of AI. As AI develops, the potential for accidental or deliberate misuse increases exponentially. Increasing examples of AI applications give rise to difficult ethical and moral questions.

**Objective 2: identify various AI and ubiquitous tools that can be used in research projects**

Professor Michael Batty demonstrated the software Quant developed by his team to analyse city-data. Professor Simon Beecham mentioned his software DesignPave as a tool for green infrastructure. Geofabric was applied to permeable pavements, coupled with moisture sensors, monitoring boxes, and other rainwater garden tools for flood control. Prof Mark Fox mentioned SPARQL which is similar to SQL but could be adapted to the knowledge graph. Its endpoint is a triplestore that can be accessed on the internet by using http and queried with SPARQL

**Objective 3: review the current state of art applications of AI for u-city**

Dr Fong suggested that human activity recognition uses sensors and machine learning algorithms to increase accuracy. Prof Thad Starner showcased his wearable machine learning inventions, which applied AI for u-city. "DialogTabs" transformed audio to transcript for the deaf. "Augmenting reality with crowdsourcing" helped people with visual impairment. "Openglass" was developed for the visually impaired user; "Question Answering" allowed user to ask the question, receives an answer from Twitter / Mechanical Turk; "Memento" let users sighted under associated objects/scenes with annotations and visually impaired user read annotations in real-time. Wearable uses machine learning was used to discover the human world and interact in it. Thus, wearable assistant became more intelligent, proactive, and socially graceful in return. Professor Yue used an example from Changlong / Chimelong theme park where the AI system recommends which place to go.

## 6.4 Summary of objectives addressed to date

<b>Objectives</b>	<b>Addressed</b> <i>(please tick)</i>	<b>Percentage Achieved</b> <i>(please estimate)</i>
1. keep abreast of the latest development trends, prospects and challenges in AI and u-city;	√	100%
2. identify various AI and ubiquitous tools that can be used in research projects;	√	100%
3. review the current state of art applications of AI for u-city.	√	100%

## 6.5 Project progress

<b>Original Implementation Schedule</b>	<b>Revised Implementation Schedule</b> <b>(Date of RGC's Approval: 2 December 2020)</b>	<b>Updated Progress</b>
January – February 2020 A committee will be formed. A website will be designed to provide details of the activity. An online registration page will be created.	No change	The project website and registration page had been created. We have re-approached the speakers after receiving the funding result to reconfirm whether they agreed again to come.
April 2020 First activity Part 1: Seminar on the latest developments in AI Part 2: Small-group research clinic	No change	Completed by BATTY, Michael (April 2020) DIGNUM, Virginia (April 2020)
April 2020 Second activity Part 1: Seminar on the latest developments in u-city Part 2: Small-group research clinic		Completed by KITCHIN, Rob (April 2020) SKIBNIEWSKI, Miroslaw J. (April 2020)
November-December 2020 Fifth activity Part 1: Seminar on the application of AI and u-city Part 2: Small-group research clinic	The remaining three events were arranged in Fourth quarter of 2020	Completed by FOX, Mark (University of Toronto) YIGITCANLAR, Tan (Queensland University of Technology) MACINTYRE, John (University of Sunderland)

<b>Original Implementation Schedule</b>	<b>Revised Implementation Schedule (Date of RGC's Approval: 2 December 2020)</b>	<b>Updated Progress</b>
		ZUO, Jian (The University of Adelaide) BOUSTRAS, George (European University Cyprus) FONG, Simon James (University of Macau) BEECHAM, Simon (University of South Australia)
Third activity Workshop on useful artificial intelligence/ubiquitous computing tools for research Fourth activity Workshop on useful artificial intelligence/ubiquitous computing tools for research		STARNER, Thad (Georgia Institute of Technology) TERZOPOULOS, Demetri Terzopoulos (University of California, Los Angeles) WANG, Patrick S.P. (Editor in chief of Int. J. Pattern Recognition and AI / Northeastern University) YUE, Xiaoguang (European University Cyprus)

## 6.6 Speaker(s)

<b>Title / Name</b> (Surname in Capital Letters)	<b>Post / Institution</b>	<b>Title / Topic of Presentation / Course</b>	<b>Previous Research Links with Hong Kong Institutions</b> (Nature and Date (Month / Year))
BATTY, Michael	Bartlett Professor of Planning and Chair of the Centre for Advanced Spatial Analysis Management Board / University College London	Artificial intelligence and smart cities	He served as a Sir Edward Youde Visiting Professor and Memorial Lecturer at the University of Hong Kong (June/2001); as a Croucher Fellow at the Centre for Urban Studies and Urban Planning, University of Hong Kong; and as an external examiner of the MSc in Geographic Information Systems at the University of Hong Kong, 2007 to 2009.
DIGNUM, Virginia	Professor of Computing Science Department / Umeå University, Sweden	The social and ethical artificial intelligence	She has co-authored with Joshua Lam from the Faculty of Architecture at the University of Hong Kong.
KITCHIN, Rob	Professor of Social Sciences Institute / Maynooth University	The programmable city	N/A

Title / Name (Surname in Capital Letters)	Post / Institution	Title / Topic of Presentation / Course	Previous Research Links with Hong Kong Institutions (Nature and Date (Month / Year))
SKIBNIEWSKI, Mirosław J.	James Clark Chair Professor of the Department of Civil and Environmental Engineering / University of Maryland	Publication strategies for AI and smart construction published in Automation in Construction: a 2020 perspective	He served as a visiting Fellow in the Jockey Club Institute for Advanced Studies at the Hong Kong University of Science and Technology in 2017. He was interviewed by the PI for a construction safety project and invited the PI of this project to submit a conference paper to the 34th International Symposium on Automation and Robotics in Construction that same year. He has previously served as a Visiting Professor at the University of Hong Kong and Hong Kong Polytechnic University.
FOX, Mark S.	Distinguished Professor of Urban Systems Engineering / University of Toronto	Introduction to knowledge graphs, ontologies and ontology engineering	He is a senior programme committee member for the 5th International Conference on Enterprise Information Systems. One of the other members of this committee is a Hong Kong scholar.
YIGITCANLAR, Tan	Professor at the School of Civil Engineering and Built Environment, / Queensland University of Technology, Brisbane, Australia. An Adjunct Professor role at the Smart Cities Lab at the Federal University of Santa Catarina	Artificially intelligent cities	He served as a committee member for the 6th International Conference on Knowledge Management in Asia Pacific organised by Hong Kong Polytechnic University.



<b>Title / Name</b> (Surname in Capital Letters)	<b>Post / Institution</b>	<b>Title / Topic of Presentation / Course</b>	<b>Previous Research Links with Hong Kong Institutions</b> (Nature and Date (Month / Year))
MACINTYRE, John	Professor and Pro Vice Chancellor / University of Sunderland	The Boom of Applied Artificial Intelligence – and the Need for Ethical AI.	University of Sunderland offers undergraduate and postgraduate programs in Hong Kong (March/2017-present)
ZUO, Jian	Professor of Sustainable Construction/ University of Adelaide	Carbon neutral city and smart city go hand-in-hand: Australian Practices	He co-authored with Prof Albert Chan titled “Selection of project procurement methods in the consumer electronics industry - A Hong Kong study” (December/2012).
BOUSTRAS, George	Professor / European University Cyprus  Editor-in-Chief / Safety Science	Safety Science challenges including AI	NA
FONG, Simon James	Associate Professor / University of Macau	Data streaming for Fast AI	He co-authored a paper for presentation in Hong Kong: Jiaxue Li, Song Wei and Simon Fong, Real-time Analysis and Visualization for Big Data of Energy Consumption, International Conference on Software and e-Business (ICSEB 2017), Hong Kong, China, (December/2017).
BEECHAM, Simon	Professor / University of South Australia	Remote sensing techniques for predicting evapotranspiration for green infrastructure and the use of embedded sensors to optimise the real-time performance of green infrastructure	Host of PI for a fellowship

Title / Name (Surname in Capital Letters)	Post / Institution	Title / Topic of Presentation / Course	Previous Research Links with Hong Kong Institutions (Nature and Date (Month / Year))
STARNER, Thad	Professor / the College of Computing, the Director of the Contextual Computing Group Technical Lead and the Manager on Google's Glass / Georgia Institute of Technology	AI through symbiosis and computational materials	He was the keynote speaker for the ACM Special Interest Group on Computer Graphics (SIGGRAPH) Asia, held in Hong Kong (November/2013), where he delivered a presentation on "Wearable Computing: Through the Looking Glass". The event saw some 300 attendees. He also served as a Wearable Computing panel member for the Symposium on Mobile Graphics and Interactive Applications in Hong Kong (November/2013).
TERZOPOULOS, Demetri	Distinguished Professor / University of California, Los Angeles	Biomimetic human simulation and the Deep Learning of Neuromuscular and Sensorimotor Control	Keynote Speaker, Game Technology Conference 2001 (GTec), Hong Kong, China, (January/2001).
WANG, Patrick S.P.	Editor-in-Chief / International Journal of Pattern Recognition and Artificial Intelligence  Professor / Northeastern University	Pattern recognition and AI	N/A
YUE, Xiaoguang	European University Cyprus	Smart Tourism	He organised 2019 International Conference on Data Mining and Machine Learning (April/2019)

6.7 Please provide details of the activities organised, including the theme / objectives of the activities, targeted participants, attendance, analysis of participants, e.g. country of origin,

research background, etc., evaluation forms of the activities and a summary of the participants' evaluation. Photos of the activities are preferred.)

Many participants are faculty members with civil engineering/construction, computer science and business background. The event series attracted many professors to attend, including Wendell Brase, Associate Chancellor of the University of California, Irvine, Professor Christian Wagner, Provost & Chair Professor, City University of Hong Kong, Professor Michael King Man Hui, Vice Rector (Academic Affairs) and Chair Professor of Marketing, University of Macau, Professor Joseph Hun-wei Lee, Vice-Chancellor and President of Macau University of Science and Technology, Professor Qing Hua He, Tongji University and his PhD students/research staffs, Professor Javier Irizarry from Georgia Institute of Technology. PhD students' attendees mainly come from the City University of Hong Kong, the University of Hong Kong, and Tongji University. While most undergraduate students come from Hong Kong Shue Yan University, the second largest group comes from China. Others come from the UK and so on.

Other than academia, participants include staff from construction companies (quantity surveyors and BIM/construction informatics practitioners), fintech/IT firms/banks, secondary schools (Ning Po College, Lingnan Hang Yee Memorial Secondary School, TWGHs S. C. Gaw Memorial College, NT Heung Yee Kuk Yuen Long District Secondary School, a tutorial school in Hong Kong, a secondary school in Guangzhou, and an International school's students and staff from Shenzhen).

Event date and theme	Number of participants	Composition*	Country of origin*
6 April 2020 Theme Artificial intelligence and smart cities  The social and ethical artificial intelligence	95	Construction 1 Faculty 25 MPhil 1 PhD student 13 Researcher 3 secondary school 2 Student 1 Undergraduate 11 Secondary school students 3	Australia 1 Cape Town 1 China 19 HK 28 Rwanda 1 Singapore 1 UK 8 US 5
8 April 2020 The programmable city  Publication strategies for getting AI and smart construction published in Automation in Construction: a 2020 perspective	314	Faculty 14 PhD student 5 Researcher 1 Undergraduate 4	Australia 1 Cape Town 1 China 12 HK 15 Rwanda 1 Singapore 1 UK 8 US 4
22 September 2020 Remote sensing techniques for	142	Faculty 18 PhD student 19 QS 2 Researcher 1	Australia 5 China 6 Cyprus 1 HK 43

Event date and theme	Number of participants	Composition*	Country of origin*
predicting evapotranspiration from green infrastructure and the use of embedded sensors to optimise the real-time performance of green infrastructure  Safety Science challenges including AI		secondary school teacher/student 2 technical officer 1 Undergraduate 31	Iran 1 Nigeria 1 South Africa 2 Thailand 14 UK 3 US 1
23 September 2020  Data stream mining for Fast AI	92	Faculty 12 Master student 1 Mphil 1 PhD student 4 QS 2 Researcher 3 Undergraduate 28 university staff 1	Auckland 1 Australia 1 China 5 HK 34 Iran 1 Italy 1 Macau 1 Nigeria 1 South Africa 3 Thailand 4 UK 1
24 September 2020 Artificial intelligent cities  Carbon neutral city and smart city go hand-in-hand: Australian Practices	96	Faculty 13 industry (fintech) 1 PhD student 3 QS 1 Researcher 5 secondary school 1 Undergraduate 32 university staff 2	Australia 4 China 4 HK 40 Iran 1 South Africa 2 Thailand 2 UK 2 US 3
7 Oct 2020 Introduction to Knowledge Graphs, Ontologies and Ontology Engineering	99	Faculty 8 Fintech 1 PhD student 19 QS 1 Researcher 1 secondary school 3 Undergraduate 41	Canada 1 China 5 HK 50 Malaysia 1 South Africa 1 Thailand 16 UK 1

Event date and theme	Number of participants	Composition*	Country of origin*
15 Oct 2020 The Boom of Applied Artificial Intelligence – and the Need for Ethical A.I.	78	Bank 2 Faculty 12 PhD student 10 QS 1 secondary school 1 Undergraduate 13 university staff 2	Australia 1 China 2 HK 25 India 2 Malaysia 2 Thailand 8 UK 2 US 1 Vietnam 1
18 December 2020 AI Through Symbiosis and Computational Materials	52	bank/SFC 2 Faculty 13 Mass media company 1 Real estate developer 1 Medical doctor 1 PhD student 9 Postdoc 1 Undergraduate 1	Australia 3 China 5 HK 16 Malaysia 1 Pakistan 1 South Africa 1 Thailand 1 UK 2 US 1
29 December 2020 Biomimetic Human Simulation and the Deep Learning of Neuromuscular and Sensorimotor Control  Smart Tourism  Pattern Recognition and AI	75	Faculty 8 Master student 2 PhD student 3 Postdoc 1 Researcher 1 SFC 1 Undergraduate 9 University staff 1	Australia 1 China 4 HK 14 India 3 Malaysia 1 Singapore 1 UK 2

Note:

\*Faculty refers to faculty members in universities, secondary school refers to secondary school staffs, SFC refers to Securities and Future Commission, QS refers to a quantity surveyor, university staff refers to staff other than researchers and faculty members. The above composition in location and background only shows those participants who have revealed their identity.

Examples of the academics (associate professor/assistant dean or above) joined our events.

Name of the professor	Position, name of the university and location	Field of research
Lau Ho Lam	Assistant Dean, University of Wollongong, Hong Kong	Computer science
Patrick X.W. Zou	Professor, Swinburne University, Australia	Construction

<b>Name of the professor</b>	<b>Position, name of the university and location</b>	<b>Field of research</b>
Yusuf Arayici	Professor, Northumbria University, UK	Construction
Au Yong Hui Nee	Dean, Universiti Tunku Abdul Rahman	Economics
Wendell Brase	Vice-Chancellor, Admin & Business Services (formerly sustainability Associate Chancellor), University of California, Irvine, the US	Sustainability
Qing Hua He	Professor and Associate Dean, Tongji University	Construction
Sun Jinkun	Dean and Professor, Panzhihua University, China	Civil engineering
Javier Irizarry	Professor, Georgia Institute of Technology, the US	Construction
Joseph Hun-wei Lee	Vice-Chancellor and President of Macau University of Science and Technology, Macau	Civil engineering
Serge Stinckwich	Head of Research, United Nations University Institute, Macau	Computer science
Christian Wagner	Provost & Chair Professor, City University of Hong Kong	Social media
Michael King Man Hui	Vice Rector (Academic Affairs) and Chair Professor, University of Macau, Macau	Marketing
Ruoyu Jin	Associate Professor, London South Bank University, UK	Construction
Syed Hasan Adil	Associate Professor & Associate Dean, Iqra University, Pakistan	Computer science
Ka Chun Wong	Associate Professor, City University of Hong Kong, Hong Kong	Computer science
Beisi Jia	Associate Professor, the University of Hong Kong, Hong Kong	Architecture
David Heesom	Reader, University of Wolverhampton, the UK	Construction
Bankole Awuzie	Associate Professor, Central University of Technology, South Africa	Construction
Benjamin Yen	Associate Professor, the University of Hong Kong, Hong Kong	Business
Cheng Ming	Associate Professor, Shanghai University, China	Economics
David Yuen	Associate Professor, Polytechnic University, HK	Chinese
Michael King Man Hui	Chair Professor, University of Macau, Macau	Marketing

## 8 April 2020 Seminars and Research Clinic Evaluation



Please fill this evaluation form from 1 strongly disagree to 5 strongly agree. Many thanks!

**\*1. Professor Rob Kitchin's seminar and research clinic**

	1	2	3	4	5
Spoke clearly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Answered questions successfully	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Was pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**2. Additional Comments for Professor Rob Kitchin's seminar and research clinic**

**\*3. Professor Miroslaw Jan Skibniewski's seminar and research clinic**

	1	2	3	4	5
Spoke clearly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Answered questions successfully	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Was pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**4. Additional Comments for Professor Miroslaw Jan Skibniewski's seminar and research clinic**

**\*5. 8 April 2020 seminars and research clinic**

	1	2	3	4	5
Met my expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhance my understanding on the presented topic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**\*6. Overall performance (1 indicates the lowest marks and 5 indicates the highest marks)**

	1	2	3	4	5
Overall performance of Professor Rob Kitchin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall performance of Professor Miroslaw Jan Skibniewski	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall evaluation of this seminar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Questions	Speaker/date	Marks	Speaker/date	Marks	Speaker/date	Marks	Speaker/date	Marks
Spoke clearly	S1	4.5	S3	4.4	S5	4.4	S7	4.5
Answered questions successfully	S1	4.5	S3	4.5	S5	4.3	S7	4.7
Was pleasant	S1	4.5	S3	4.5	S5	4.4	S7	4.6
Spoke clearly	S2	4.5	S4	4.4	S6	4.3	S8	4.4
Answered questions successfully	S2	4.5	S4	4.4	S6	4.5	S8	4.3
Was pleasant	S2	4.5	S4	4.4	S6	4.3	S8	4.4
The overall evaluation of the online seminars and research clinics—Met my expectations	6-Apr-20	4.4	8-Apr-20	4.4	22-Sep-20	4.3	24-Sep-20	4.5
Enhance my understanding on the presented topic	6-Apr-20	4.3	8-Apr-20	4.4	22-Sep-20	4.4	24-Sep-20	4.5
Overall performance of the speaker	S1	4.5	S3	4.5	S5	4.3	S1	4.5
Overall performance of Professor Michael Batty	S2	4.5	S4	4.4	S6	4.3	S2	4.2
Overall evaluation of this seminar	6-Apr-20	4.5	8-Apr-20	4.6	22-Sep-20	4.4	24-Sep-20	4.6

Questions	S9 marks	S10 marks	S11 marks	S12 marks	S13 marks	S14 marks	S15 marks
Spoke clearly	3.7	4.6	4.6	4.2	4.8	4.5	4.6
Answered questions successfully	4.0	4.7	4.3	4.3	4.8	4.4	4.5
Was pleasant	4.0	4.8	4.2	4.3	4.8	4.5	4.5
The overall evaluation of the online seminars—Met my expectations	3.7	4.6	4.2	4.3	4.7	4.4	4.4
Enhance my understanding on the presented topic	3.8	4.5	4.1	4.3	4.8	4.6	4.5
Overall performance of Professor	3.9	4.6	4.5	4.3	4.8	4.5	4.5

S1 Professor Virginia DIGNUM  
S2 Professor Michael BATTY  
S3 Professor Rob KITCHIN  
S4 Professor Miroslaw Jan SKIBNIEWSKI  
S5 Professor Simon BEECHAM  
S6 Professor Geroge BOUSTRAS  
S7 Professor Tan YIGITCANLAR

S9 Dr Simon FONG  
S10 Professor Mark FOX  
S11 Professor John MACINTYRE  
S12 Professor Thad STARNER  
S13 Distinguished Professor Demetri TERZOPOULOS  
S14 Adjunct Professor Gabriel Xiao-Guang YUE  
S15 Professor Patrick S.P. WANG



S8 Professor ZUO Jian

Note: maximum marks for each speaker are 5.

## 6 April 2020 Speaker 1 Virginia DIGNUM

**CONCERN: WHO IS DEVELOPING AI?**

- 18% researchers at conferences are women
- 80% professors are men
- Workforce
  - Google: 2,5% black, 3,6% Latino, 10% women
  - Facebook: 3,8% black, 5% Latino, 15% women

UMEÅ UNIVERSITY

## 6 April 2020 Speaker 2 Professor Michael BATTY

**Artificial Intelligence and Smart Cities**

Michael Batty  
Centre for Advanced Spatial Analysis  
CASA-UCL

6<sup>th</sup> April, 2020

[m.batty@ucl.ac.uk](mailto:m.batty@ucl.ac.uk)  
[@jmichaelbatty](https://twitter.com/jmichaelbatty)

Artificial Intelligence and Smart Cities

\* The participants' faces are covered due to privacy concerns.

## 8 April 2021 Speaker 1 Professor Rob KITCHIN

Zoom Recording...

Participants (98)

Find a participant

yes no go slower go faster more clear all

Mute All Unmute All More

8:26 pm 8/4/2020

## 8 April 2020 Speaker 2 Professor Miroslaw SKIBNIEWSKI

Zoom Recording...

Participants (184)

Find a participant

yes no go slower go faster more clear all

Mute All Unmute All More

Zoom Group Chat

14 Activate Windows Go to Settings to activate Windows.

9:22 pm 8/4/2020

Why is this topic important and for what specific constituents?

What is the problem to be solved?

Who has previously worked on similar or related problems?

What is the research question to be answered?

What is the research method used to generate the answer to the research question?

What are the results obtained with the use of this method, and what is the answer to the research question?

Why are these results significant and how have they been validated in practice?

What are the future directions for follow-up research?

General Reasoning

\* The participants' faces are covered due to privacy concerns.

## 22 September 2020 Speaker 1 Professor Simon BEECHAM

**Presentation Outline**

1. Sensors & Smart Cities
2. Application of Sensors to Green Infrastructure
  - Permeable pavements
  - Rainwater gardens
  - Living walls
3. Satellites for Remote Sensing of Urban Vegetation

Figure 10 Presentation outline of Prof Simon Beecham's talk.

## 22 September 2020 Speaker 2 George BOUSTRAS

**emerging risks in safety management - PowerPoint**

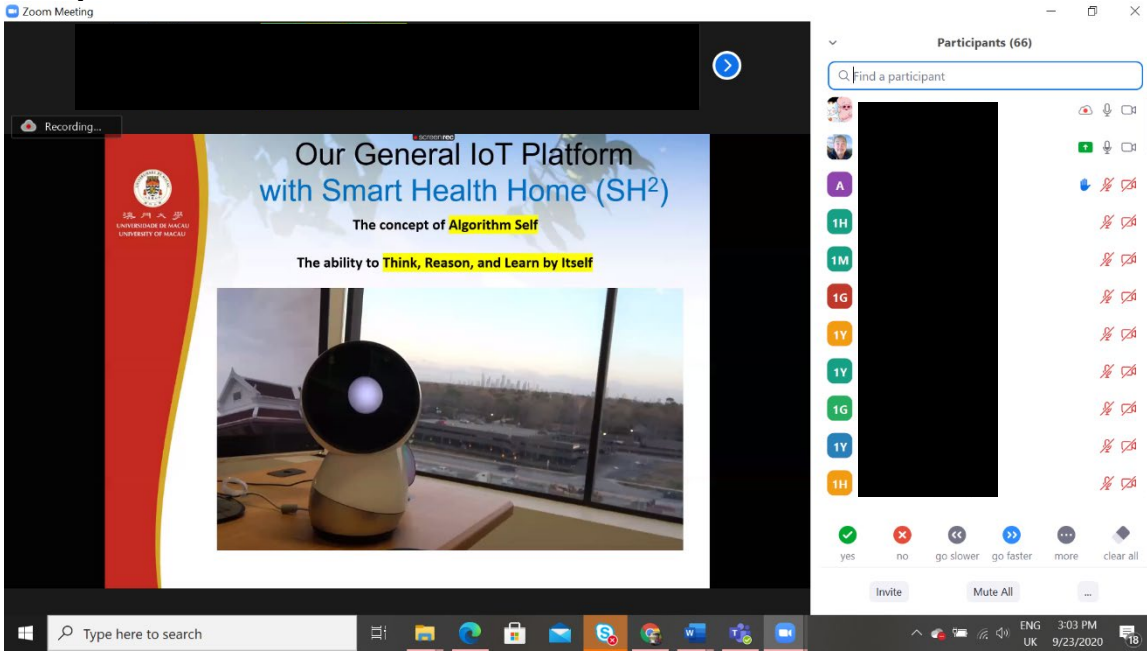
European University Cyprus | CER!DES  
Centre of Excellence in Risk & Decision Sciences

**Emerging Risks in Safety Management**

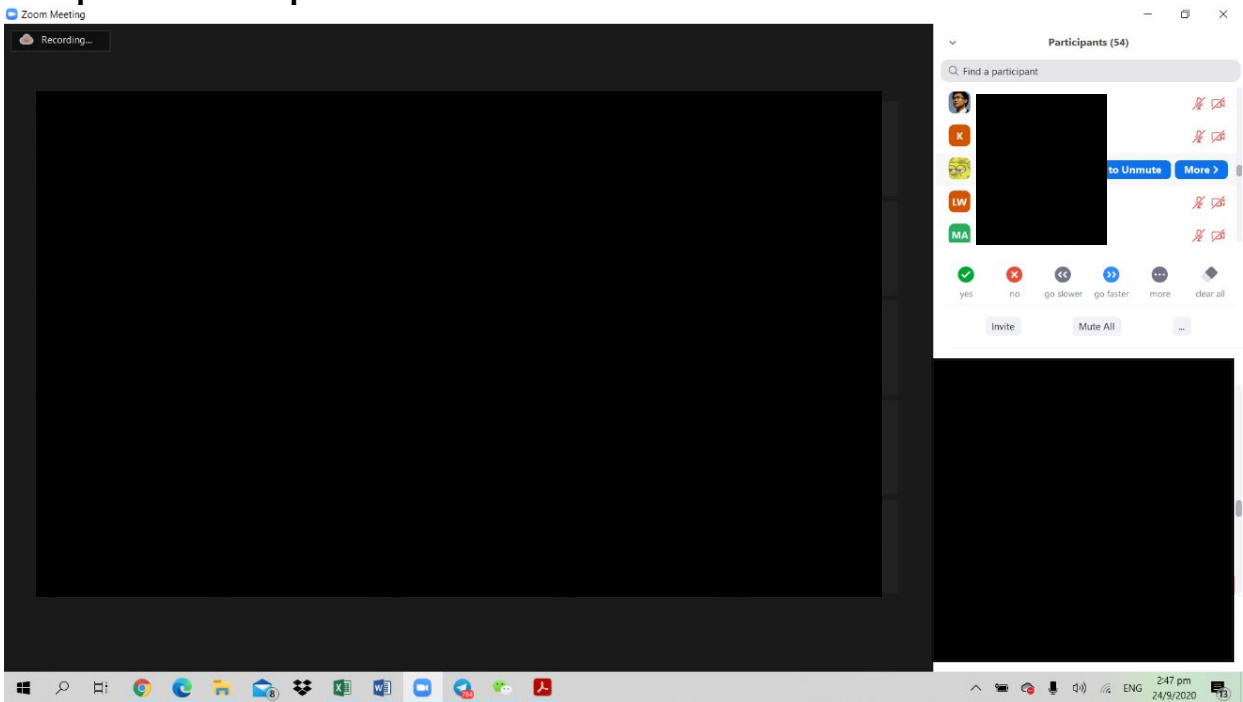
Georgios Boustras, BEng(Hons), MSc, PhD, CEng, CSci, MIChemE, MIFireE

\* The participants' faces are covered due to privacy concerns.

### 23 September 2022 Simon FONG



### 24 September 2020 Speaker 1 Professor Tan YIGITCANLAR



\* The participants' faces are covered due to privacy concerns.

## 24 September 2020 Speaker 2 Professor Jian ZUO

Recording...

- In 2017, the University of Adelaide announced their [Campus Sustainability Plan](#), with an overall investment of \$14.4 million including \$12.8 million allocated to carbon emission reductions across three campuses.
- the first Founding Partner of Carbon Neutral Adelaide
- detailed actions in saving energy, reducing waste, improving purchasing decisions, and engaging students and staff in changes for sustainability.
- The University reports that campus sustainability projects are delivering 4,389 Gigajoules of energy savings, \$295,000 of electricity savings, and avoiding 597 tonnes of carbon-equivalent emissions every year.
- Carbon emissions have fallen from 73,354 tonnes in 2016 to 72,616 tonnes in 2019.

TARGET	ACHIEVED IN 2017/2018
2 megawatts of renewable energy installed by 2020	658 kilowatts installed
15% reduction in energy intensity by 2020 on the 2014 baseline	12% reduction in energy intensity achieved
50% diversion in waste to landfill by 2020	34% diversion in waste to landfill
10% annual increase in procurement on sustainably and ethically sourced office supplies (2015 baseline)	43% increase on 2017 and 50% increase on baseline

The University of Adelaide Slide 65

Participants (42)

Find a participant

Unmute More

yes no go slower go faster more clear all

Invite Mute All

4:57 pm 24/9/2020

## 7 Oct 2020 Speaker Mark FOX

Zoom Meeting

Recording... Speaker View

Mute Stop Video Security Participants 78 Chat Share Screen Reactions More End

Type here to search

\* The participants' faces are covered due to privacy concerns.

## 15 Oct 2020 Professor John MACINTYRE

Zoom Meeting | You are viewing John MacIntyre, PVC, Universit... 's screen | View Options

Recording...

### HAS A.I. REACHING A TIPPING POINT?

The exponential increase in development and application of A.I. may be at, or even past, a tipping point similar to that which faced genetic science 20 years ago

Participants (51)

Find a participant

Participants: OI, RA, SB, SY, TL, T, TK, WL, WB

yes no go slower go faster more clear all

Invite Mute All

Chat

Unmute Stop Video Security Participants 51 Chat Share Screen Reactions More End

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ENG 3:19 PM US 10/15/2020

## 18 December 2020 Professor Thad STARNER

Zoom Meeting | You are viewing Thad Starner #1's screen | View Options

Recording...

### Wearable Augmentation since 1993

Participants: 34

Mute Stop Video Security Participants 34 Chat Share Screen Reactions More End

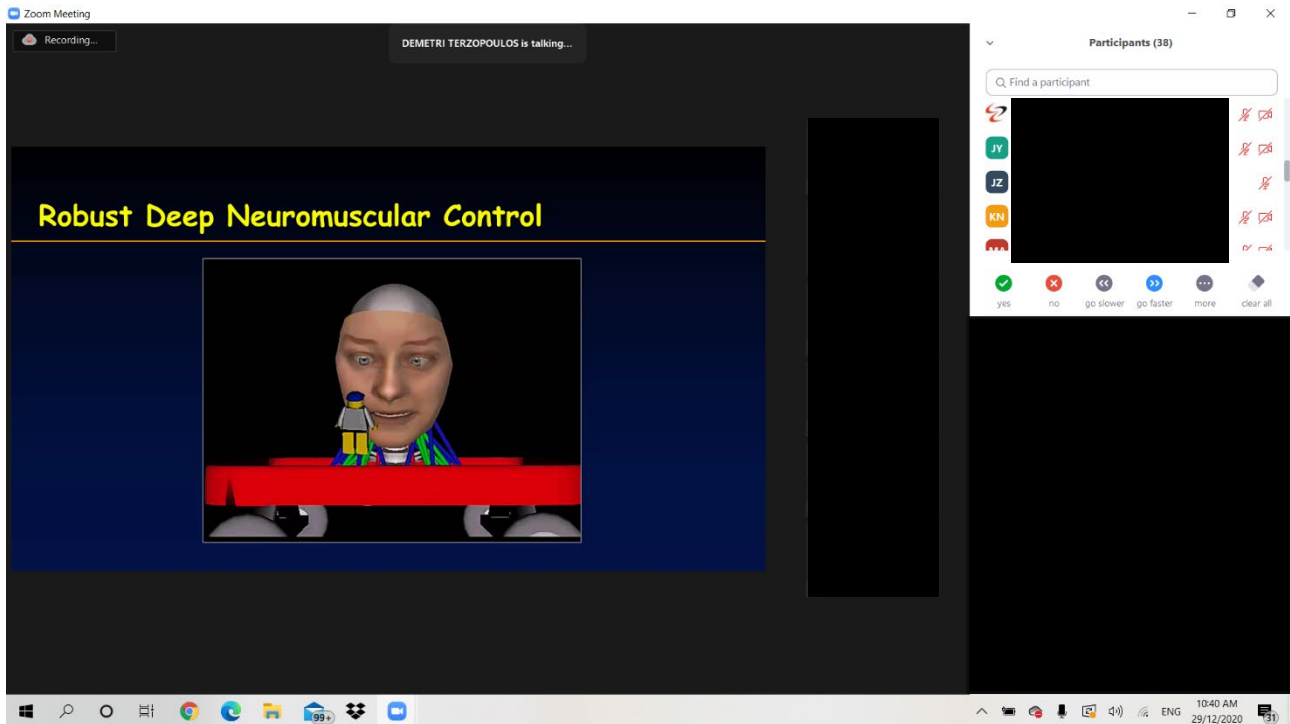
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45

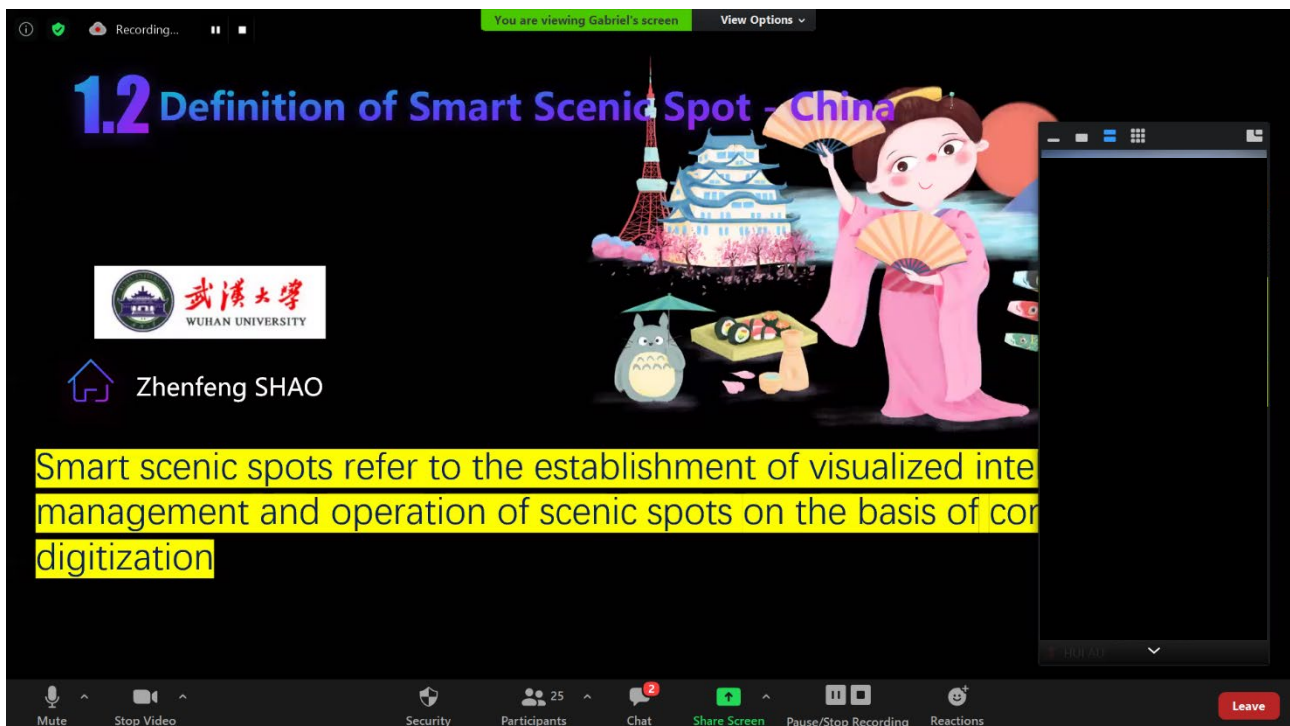
\* The participants' faces are covered due to privacy concerns.



## 29 December 2020 Distinguished Professor Demetri TERZOPOULOS



## 29 December 2020 Xiaoguang YUE



\* The participants' faces are covered due to privacy concerns.



## 29 December 2020 Professor Patrick WANG



\* The participants' faces are covered due to privacy concerns.

### 7. Research-Related Outcome

#### 7.1 Potential for development into research proposal and the proposed course of action (Maximum half a page)

- PI and Prof Xiaoguang Yue submitted a proposal, “Semantic web and automated unstructured data analytics and urban informatics”. PI, co-Is and Prof Xiaoguang Yue involved in The book project titled AI and ubiquitous city (under Springer review), identified some of the research agenda (proposal) which can be developed in the future.
- Prof Tan Yigitcanlar and PI’s application for an Australian Research Council (ARC) grant proposal titled “Responsible Urban Innovation with Local Government Artificial Intelligence” is successful, (application amount AUS \$711,071, equivalent to about HK\$4,009,871.58, together with Prof Tan Yigitcanlar, Prof Kevin Desouza, Prof Karen Mossberger from Arizona State University, Prof Juan M. Corchado from University of Salamanca, Prof Rashid Mehmood from King AbdulAziz University).
- PI and Prof Jian Zou and Prof Xiaoguang Yue submitted a proposal titled, “Regulations, policies, and perceptions regarding AI safety in built environments: international and Hong Kong’s experiences and social-cultural settings
- Prof Simon Beecham and PI discussed the smart bed and breakfast accommodation for tourists

#### 7.2 Research collaboration achieved (Please give details on the achievement and its relevant impact)

##### 7.2.1 Edited book submitted

Li, Rita Yi Man; Chau, Kwong Wing; Ho, Daniel Chi Wing co-edited a book ‘AI and ubiquitous city’. A summary for the IIDS event of about 40 pages about the contents delivered by the speakers were included.

### 7.2.2 Special issue

PI collaborated with Prof Georgios Boustras for editing a Special Issue on ‘AI and smart cities’ implications on urban safety’ in Safety Science SSCI impact factor 4.877 (Q1). 11 papers have been accepted for publication till 5 December 2021

### 7.2.3 Journal publication (with \*Speaker and \*\*participants)

1. Li, Na\*\*; Li, Rita Yi Man; Pu, Ruihui\*\* (2022, forthcoming) What is in a name? A modern interpretation from housing price in Hong Kong, Pacific Rim Property Research Journal
2. Song, Lingxi\*\*; Li, Rita Yi Man; Yao, Qi (2022) An informal institutional comparative study on occupational safety knowledge sharing via French and English Tweets: languaculture, weak-strong ties and sentiment perspectives, Safety Science, 147, 105602 [SSCI 4.877, Q1]
3. Siying Yang, Yifan Zhong, Dawei Feng, Rita Yi Man Li, Xue-Feng Shao\*\*, Wei Liu (2022) Robot Application and Occupational Injuries: Are Robots Necessarily Safer? Safety Science, 147, 105623 [SSCI 4.877, Q1]
4. Yue, Xiao Guang\*; Lu, Rong; Gu, Jianqiang; Dong, Rebecca Kechen; Li, Rita Yi Man (2022, forthcoming) Modelling the Factors that Affect Information Disclosure Willingness in Mobile Social Networks, The Empirical Economics Letters
5. Bo Li\*\*, Rita Yi Man Li, Thitinant Wareewanich (2021) Analysis of Internal Influencing Factors for Improving Competitiveness of Large Real Estate Enterprises in China: A Structural Equation Model Approach, Land [SSCI 3.395]
6. Shao, Xuefeng\*\*; Li, Yi; Suseno, Yuliani; Li, Rita Yi Man; Gouliamos, Kostas Yue, Xiaoguang\*; Luo, Yumeng (2021) How does Facial Recognition as an Urban Safety Technology Affect Firm Performance? The Moderating Role of the Home Country’s Government Subsidies, Safety Science, 143, 105434 [SSCI 4.877, Q1]
7. Jinkun Sun\*\*, Rita Yi Man Li, Nuttapong Jotikasthira, Li Kui, Liyun Zeng\*\* (2021) Experimental Study on Lightweight Precast Composite Slab of High Titanium Heavy Slag Concrete (LPCSHTHSC), Advances in Civil Engineering, 2021, 6665388 [SSCI 1.924]
8. Yigitcanlar, Tan\*; Corchado, Juan M.; Mehmood, Rashid; Li, Rita Yi Man; Mossberger, Karen; Desouza, Kevin (2021) Responsible Urban Innovation with Local Government Artificial Intelligence: A Conceptual Framework and Research Agenda, Journal of Open Innovation: Technology, Market, and Complexity [Scopus Q1]
9. Li, Rita Yi Man; Yue, Xiaoguang\*; Crabbe, James (2021) Covid-19 in Wuhan: pressing realities and city management, Frontiers in Public Health, 8, 1079 [SSCI IF 3.709]
10. Chen, Xiangliu; Yue, Xiao-Guang\*; Li, Rita Yi Man; Zhumadillayeva, Ainur; Liu, Ruru (2021) Design Application of an Improved Genetic Algorithm to a Class Scheduling System, International Journal of Emerging Technologies in Learning (iJET) 16(01):44
11. Li, Zheng Zheng; Li, Rita Yi Man; Malik, Muhammad Yousaf; Murshed, Muntasir; Khan, Zeeshan\*\*; Umar, Muhammad (2021) Determinants of Carbon Emission in China: How Good is Green Investment, Sustainable Production and Consumption, 27, 392-401 [IF 5.032, Q1]
12. Khan, Zeeshan\*\*; Ali, Shahid; Dong, Kangyin; Li, Rita Yi Man (2021) How does fiscal decentralisation affect CO2 emissions? The roles of institutions and human capital, Energy Economics, 94, 105060 [IF 5.203, Q1]
13. Yigitcanlar, Tan\*; Kankanamge, Nayomi; Regona, Massimo; Maldonado, Andres; Rowan, Bridget; Ryu, Alex; Desouza, Kevin C.; Corchado, Juan M.; Mehmood, Rashid; Li, Rita Yi Man (2020) Artificial Intelligence Technologies and Related Urban Planning and Development Concepts: How Are They Perceived and Utilised in Australia? Journal of Open Innovation Technology, Market and Complexity, 6(4), 187 [Scopus Q1]

### 7.2.4 Book chapter publication (with \*Speaker and \*\*participant)

Li Meng\*\*, Rita Yi man Li, Simon Beecham\*, Teo Kok Kuan (2021) Sustainable wastewater management in South Australia, Advances in Human Factors in Architecture, Sustainable Urban Planning and Infrastructure, Springer, pp. 66-73.

#### 7.2.4 Other collaboration

Prof Tan invited PI to act as the PhD co-supervisor of Massimo Regona in Queensland University of Technology. Dr Simon Fong now serves as our external examiner for Department of Economics and Finance's FinTech program.

- 7.3 Any new development and/or challenging research topic(s) has / have been identified and any new initiative(s) for future research has / have been inspired.

We are exploring AI applications for the hostels in Australia's study with Prof Simon Beecham^

### 8. The Layman's Summary

(Describe *in layman's language* the nature, significance and value of the research activities, in no more than 200 words)

In this project, experts were invited to share their knowledge with local academics in three areas:

The *first area* focused on the latest trends, developments and research topics in AI and u-cities. The *second area* focused on the current state of the art AI technology that can be used in research projects. Scholars and experts in the programmes demonstrated various AI and ubiquitous tools which enhanced academics' research capability. For the *third area*, renowned researchers shared their experiences applying AI for u-cities research.

Headlined by renowned scholars and leading experts, this project advanced the understanding of AI and u-city, bringing together local academics to discuss their ideas with international scholars. It inspired research agendas, introduced new methods and tools for research, and encouraged better research with practical applications. It offered a golden chance for academics to develop their research capability and enhance their field knowledge. Thus, it will bring long-lasting benefits to academia.

**Part C: Research Output****9. Recognised Conference(s) Paper(s) Related To This Project Was / Were Delivered (As Applicable)***(Please attach a copy of each conference abstract)*

<b>Month / Year / Place</b>	<b>Title</b>	<b>Conference Name</b>	<b>Submitted to RGC</b> <i>(indicate the year ending of the relevant progress report)</i>	<b>Attached to this Report</b> <i>(Yes or No)</i>	<b>Acknowledged the Support of RGC</b> <i>(Yes or No)</i>
December /2021/ Online	Natural language processing, prediction, and computer vision for civil engineering works and construction safety: current state of the art and the way forward	Global Webinar on Civil, Architectural & Environmental Engineering	31 December 2021	Yes (appendix 1)	Yes

**10. Research Personnel Trained (As Applicable)**

<b>Name</b>	<b>Capacity</b>
N/A	N/A

**11. Other Impact (As Applicable)***(e.g. prizes, collaboration with other research institutions, technology transfer, etc.)*

PI collaborates with Sun Jinkun, dean of Civil and Architectural Engineering Institute, Panzhuhua University, awarded the best paper award for the paper titled “Mechanical and Physical Properties of Basalt Fiber High Strength High Titanium Heavy Slag Concrete”, Rajamangala University of Technology Rattanakosin, International Conference “Innovative Technology and Creative Work toward Sustainable Development in 2021.

**12. Statistics on Research Outputs**

	<b>Peer-reviewed Journal Publications</b>	<b>Conference Papers</b>	<b>Scholarly Books, Monographs and Chapters</b>	<b>Patents Awarded</b>	<b>Other Research Outputs (please specify)</b>	
<b>No. of outputs arising directly from this project</b>	13	1	1 edited Springer book (under review) and 1 book chapter	N/A	Type	No.
					N/A	N/A

### 13. Public Access Of Completion Report

*(Please specify the information, if any, that cannot be provided for public access and give the reasons.)*

<b>Information that Cannot Be Provided for Public Access</b>	<b>Reasons</b>
N/A	N/A