THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

Otto Poon Charitable Foundation
Smart Cities Research Institute
潘樂陶慈善基金智慧城市研究院

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SCRI

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About SCRI

In March 2018, the University officially opened the Laboratory for Smart City and Spatial Big Data Analytics. The laboratory forms a platform for academic, industry, and government partners to work hand-in-hand to deliver advanced yet practical solutions. In September 2018, the University received a generous major donation from Ir Dr Otto Poon Lok-to, Founder and Chairman of ATAL Engineering Group, in the name of Otto Poon Charitable Foundation. With the financial support by the donation as the seed fund and a number of foundational projects that have been accomplished or are ongoing, Otto Poon Charitable Foundation Smart Cities Research Institute (SCRI) was formally approved by the University and established in May 2020.

SCRI provides an interdisciplinary platform for PolyU's experts to develop an international leading area in Smart Cities by capitalizing on existing interdisciplinary research strengths, including but not limited to departments in Faculty of Construction and Environment, Faculty of Engineering, Faculty of Science, and Faculty of Business with including other research institutes.

To respond to the generic needs for global smart cities development as well as the specific need of Hong Kong, the SCRI has nine research themes which covers the six smart areas, namely "Smart Mobility", "Smart Living", "Smart Environment", "Smart People", "Smart Government" and "Smart Economy".

2018

Foundation of Laboratory for Smart City and Spatial Big Data Analytics, PolyU

2019

Donation by Otto Poon Charitable Foundation (naming ceremony in 2021)

2020

Foundation of the SCRI

2021

International recognition of the SCRI research achievements

Our Vision

Be a center of excellence in urban informatics worldwide and a living laboratory of Smart City development for Hong Kong and the Guangdong-Hong Kong-Macao Greater Bay Area (GBA).

Our Mission

1. To develop cutting-edge Smart City technologies;
2. To translate the developed technologies to industry; and
3. To provide and demonstrate Smart City solutions to Hong Kong and the Greater Bay Area.

Director's Message

Prof. John W.Z. SHI
AIEAS, DNatSc, FAcSS, FHKIS, FRICS
Director of SCRI
Chair Professor of Geographical Information Science and Remote Sensing &
Otto Poon Charitable Foundation Professor in Urban Informatics

" SCRI aims at being a global centre of excellence in urban informatics and a living smart cities laboratory for Hong Kong and the Guangdong-Hong Kong-Macao Greater Bay Area in order to promote smart cities development. "

Welcome to Otto Poon Charitable Foundation Smart Cities Research Institute (SCRI)

SCRI was officially approved by the University in April 2020, based on the achievement of the Laboratory for Smart City and Spatial Big Data Analytics, launched at the University, in March 2018.

SCRI aims to develop cutting-edge smart city technologies, together with the means whereby the appropriate developed technologies can be transferred to industry and hence, provide and demonstrate smart city solutions. To achieve the goals, SCRI is to be designed as an open platform, and include scholars and their interdisciplinary research, and also the general public, so as to involve all in appropriate SCRI activities and thereby achieve successful smart city development.

The Smart City area, together with those of Aerospace and Aviation Engineering, Drug Development and Health Science, AI, Big Data and Fintech, Sustainable Infrastructure and Environment, Humanities, and Advanced Materials, are the PolyU's key areas of research excellence.

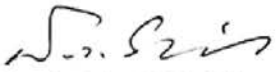
SCRI strives for making breakthroughs in the development of urban informatics and smart cities at three levels, namely: **principles and theories** of contemporary fast-changing cities; **core enabling technologies** such as geospatial artificial intelligence, high-definition mapping, artificial intelligence and the internet of things (AIoT), digital twins, and distributed machine learning; and **applications** in urban design and planning, transport, public services, finance, environment, and improvement of urban resilience.

The PolyU is intended to be used as a living testbed for SCRI, and the technologies developed in SCRI further used in Hong Kong, and then Great Bay Area and eventually worldwide.

Currently, **9 research focus areas** have been identified in SCRI:

- High-definition Map for Autonomous Driving
- Connected Environment for Urban Mobility
- Smart Positioning and Navigation
- Ageing Mobility Analytics
- Data Science for Smart Cities
- Smart Environment
- Smart Living
- Smart Government
- Smart Economy

SCRI welcomes research collaborations from research institutes, industry sectors and government departments. The newly developed cutting edge technologies and solutions developed in SCRI will provide the important elements, necessary, to build Hong Kong as a global smart city.



Prof. John W Z Shi
Director, Otto Poon Charitable Foundation Smart Cities Research Institute
The Hong Kong Polytechnic University

International Advisory Committee

Prof. Michael Goodchild

Chairman of International Advisory Committee & Distinguished Professor Emeritus of University of California

University of California

Prof. John W.Z. Shi

Convenor of International Advisory Committee & Chair Professor of Geographical Information Science and Remote Sensing

The Hong Kong Polytechnic University

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Chair of the Centre for Advanced Spatial Analysis (CASA), Emeritus Professor of Planning

University College London

Prof. Jianya Gong

Academician of Chinese Academy of Sciences, Dean of School of remote sensing and information

Wuhan University

Prof. Christian Heipke

Former President of International Society for Photogrammetry and Remote Sensing (ISPRS), Director of Institute of Photogrammetry and GeoInformation (IPI)

Leibniz Universitat Hannover

Prof. Ying Jin

Director of the Martin Centre for Architectural and Urban Studies, Deputy Head of Department of Architecture for Research, Professor of Architecture and Urbanism

University of Cambridge

Dr. Victor Khoo

Director of Survey & Geomatics Division

Singapore Land Authority (SLA)

Prof. Qingquan Li

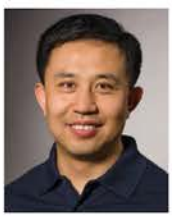
Party Secretary of Shenzhen University (former President), Director of Shenzhen Key Laboratory of Spatial Smart Sensing and Service

Shenzhen University

Ir Dr. Otto Poon

Chairman of ATAL Engineering Group

ATAL Engineering Group



Prof. Shaowen Wang

Head of the Department of Geography and Geographic Information Science

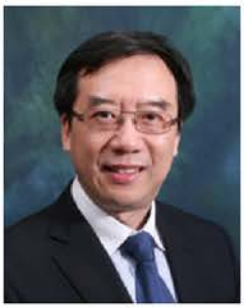
University of Illinois Urbana-Champaign (UIUC)

Prof. Chenghu Zhou

Academician of Chinese Academy of Sciences, Professor

The Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences

Management Committee



Prof. John W.Z. Shi

Director of SCRI & Chair Professor of Geographical Information Science and Remote Sensing

Department of Land Surveying and Geo-Informatics, PolyU

Ir Prof. Niu Jianlei

Associate Director of SCRI & Chair Professor of Building Environment and Energy

Department of Building Environment and Energy Engineering, PolyU

Prof. Chen Xiaojun

DoUBDA & Chair Professor of Applied Mathematics

Department of Applied Mathematics, PolyU

Prof. Xiaoli Ding

DoRILS & Chair Professor of Geomatics

Department of Land Surveying and Geo-Informatics, PolyU

Prof. Qing Li

Head(COMP) & Chair Professor of Data Science

Department of Computing, PolyU

Prof. Lu Haitian

DoMD & Professor

School of Accounting and Finance, PolyU

Research Focus Areas

High-definition Map for Autonomous Driving

Lead Investigator:
Prof. John Shi (LSGI)

Connected Environment for Urban Mobility

Lead Investigator:
Prof. Edward Chung (EE)
Prof. Anthony Chen (CEE)

Smart Positioning and Navigation

Lead Investigator:
Prof. Wu Chen (LSGI)
Prof. Xiaoli Ding(LSGI)

Ageing Mobility Analytics

Lead Investigator:
Prof. Geoffrey Shen (BRE)

Data Science for Smart Cities

Lead Investigator:
Prof. Qing Li (COMP)
Prof. Xiaojun Chen (AMA)

Smart Environment

Lead Investigator:
Prof. Qihao Weng (LSGI)
Prof. Charles Wong (LSGI)

Smart Living

Lead Investigator:
Prof. Jianlei Niu (BEEE)
Prof. Ping Li (FH)

Smart Government

Lead Investigator:
Prof. Geoffrey Shen (BRE)

Smart Economy

Lead Investigator:
Prof. Haitian Lu (MDO)

Research Laboratories

Laboratory for Smart City and Spatial Big Data Analytics

Navigation Laboratory

Brain, Language, and Computation Lab (BCL)

Indoor Environmental Quality (IEQ) Laboratory

Ng Wing Hong Laboratory For Sustainable City

University Research Facility in Big Data Analytics (UBDA)

Research Center on Data Science and Artificial Intelligence

Center for Economic Sustainability and Entrepreneurial Finance

Transport and Highway Engineering Laboratory

AMTD-FinTech Center

Major External Research Grants

Date	Funding Scheme	Title	PI/PC
2022	RGC Theme-based Research Scheme	Healthy and Resilient City with Pervasive LoCHs	Prof. Jianlei Niu (BEEE), Prof. John Shi (LSGI) [Co-PI]
2022	RGC-CRF	Spatiotemporal prediction and real-time early warning of COVID-19 onset risk	Prof. John Shi (LSGI)
2021	ITF	A Decision-Support Platform for COVID-19 Pandemic Control	Prof. John Shi (LSGI)
2021	ITF	Evaluation tools for analysis for the effectiveness of social distance policies and international border control for the spread of COVID-19 pandemic	Prof. Wu Chen (LSGI)
2021	NSFC, Excellent Young Scientists Fund	Remote Sensing: Time Series Image Processing	Dr ZHU Xiaolin (LSGI)
2021	RGC-GRF	Unveiling the pathogenic mechanisms of tuberculous meningitis caused by hypervirulent Mycobacterium tuberculosis strains using multi-omic analysis coupled with a multiple fluorescent zebrafish infection model"	Dr Gilman Siu (HTI)
2020	HMRF	Whole-genome sequencing of COVID-19 cases in Hong Kong: Development of a geo▤phylogenetic database and characterisation of SARS-CoV-2 variants circulating in the community	Dr Gilman Siu (HTI)
2020	ITF	3D Spatial Data Platform for Modular Integrated Construction	Prof. John Shi (LSGI)
2020	ITF-PRP	A Portable nanopore sequencing-based assay for rapid diagnosis of bloodstream infection	Dr Gilman Siu (HTI)
2020	ITF	Automatic body temperature measurement and high-risk areas and crowds identification system	Prof. John Shi (LSGI)
2020	ITF-PSTS	Development of nanopore sequencing-based platform for rapid monitoring of COVID▤19 transmission in Hong Kong	Dr Gilman Siu (HTI)
2020	Ministry of Science and Technology of China	Study and Demonstration of Comprehensive Decision Making and Cooperative Service in Guangdong-Hong Kong-Macao Greater Bay Area	Prof. John Shi (LSGI)

IRF-SC Projects Funded by SCRI

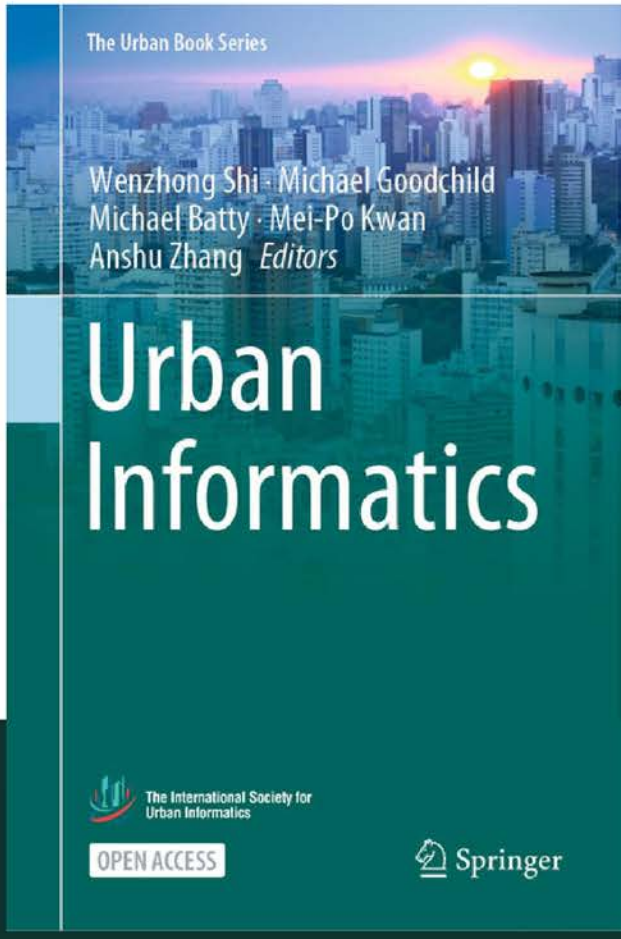
Date	Funding Scheme	Title
Nov 2022	Interdisciplinary Research Fund	A people-centric index for livability assessment of urban communities
Nov 2022	Interdisciplinary Research Fund	Development of an AI-empowered Multi-modal Digital Twin Platform for Recurrent and Non-recurrent Traffic Management on Urban Networks
Nov 2022	Interdisciplinary Research Fund	Urban Flood Risk Assessment and Prediction Under Climate Change
May 2022	Interdisciplinary Research Fund	A Virtual V2X-aided Advanced Driver Assistance System
Apr 2022	Interdisciplinary Research Fund	Assessment and optimization of development potential of zero-carbon/emission buildings in Hong Kong based on 3D geospatial data smart city platform
Apr 2022	Interdisciplinary Research Fund	Bank Branch, Digital Transformation, and Performance: Evidence from Spatial Panel Data on Mobile Banking APP Usage
Apr 2022	Interdisciplinary Research Fund	Individual and population level risk calculator of COVID-19
Apr 2022	Interdisciplinary Research Fund	Real Estate Tokenization in Hong Kong
Apr 2022	Interdisciplinary Research Fund	Smart Infrastructure Planning for Transportation Electrification
Dec 2021	Interdisciplinary Research Fund	An Urban Microclimate-behaviour Map System for Age-friendly Community Design and Elderly Outdoor Activity Guide
Sep 2021	Interdisciplinary Research Fund	Urban Platoon Eco-Driving Advisory upon Unreliable Wireless Communications
Jul 2021	Interdisciplinary Research Fund	Land Use Policies for Smart City Development in Hong Kong: A Participatory Platform Supported by Spatial Analysis Technologies
Jul 2021	Interdisciplinary Research Fund	Smart Land Use and Transportation Planning for Connected and Autonomous Vehicles
Jun 2021	Interdisciplinary Research Fund	Urban Positioning Infrastructure for Autonomous Vehicles
Jun 2021	Interdisciplinary Research Fund	High Definition (HD) Map for Autonomous Driving in Smart Cities

Book of Urban Informatics

- This book is **the first** to systematically introduce the principles, technologies, and smart applications of urban informatics, from the dimensions of Urban Science, Urban Sensing, Urban Computing, Urban Big Data Infrastructure, and Urban Systems and Applications.
- The book brings together **40 internationally leading research teams** across a wide range of scientific disciplines to deliver collaborative understanding, technology and solutions.
- The book has over **1.42 million** chapter downloads within 2 years of publication. It is **Springer's book with the most chapter downloads** in 2022 under the interdisciplinary and social science sector (Springer published over 2,000 books in this sector in 2021 alone).
- The book is commented as "compulsory read", "must-read book", and "the best introduction book to the smart cities field (for planners)". It has been selected as the textbook/reference book by many universities worldwide, for example, MIT and Zhejiang University.

Editors:

- **Wenzhong Shi**, Chair Professor, The Hong Kong Polytechnic University; Academician of the International Eurasian Academy of Sciences; Fellow of Academy of Social Sciences (UK); Recipient of Natural Science Award, State Council of China
- **Michael F. Goodchild**, Professor Emeritus, University of California, Santa Barbara; Distinguished Chair Professor, The Hong Kong Polytechnic University; Member of the US National Academy of Sciences and American Academy of Arts and Science; Recipient of the Prix Vautrin Lud
- **Michael Batty**, Bartlett Professor, University College London; Distinguished Chair Professor, The Hong Kong Polytechnic University; Fellow of the British Academy and the Royal Society (UK); Recipient of the Prix Vautrin Lud
- **Mei-Po Kwan**, Choh-Ming Li Professor, Chinese University of Hong Kong; Fellow of the UK Academy of Social Sciences and the American Association for the Advancement of Science
- **Anshu Zhang**, Research Assistant Professor, The Hong Kong Polytechnic University



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Otto Poon Charitable Foundation
Smart Cities Research Institute
潘樂陶慈善基金智慧城市研究院

Phone Number

+852 3400 3872

Email Address

info.scri@polyu.edu.hk

Website

https://www.polyu.edu.hk/scri


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