

The training program is organized by the State Key Laboratory of Internet of Things for Smart City (University of Macau), co-organized by Aerospace Information Research Institute, Chinese Academy of Sciences and financially supported by the Alliance of International Science Organizations. It is intended for early career scientists and engineers with research interests in remote sensing techniques and urban environment. It includes the following topics:

- **Remote sensing technology and application:** How are remote sensing data, radar observation, and in-situ measurements retrieved and processed? How to interpret the data? How to identify the urban environmental factors using the remote sensing technologies?
- **Characterizing the urban environmental factors:** What are the major urban environmental factors and their key features? How to extract the information of interest? What are the dynamic mechanisms of urban heat and urban green? How do they interact with other key factors? How to make the cities safe, resilient, and sustainable?
- Advances in model-data fusion: How are the motions and fluxes represented in numerical models? How to predict the influence of anthropic activities on urban environment? What are the challenges of predicting the urban flood hazards? What is the importance of remote sensing technologies and products? How to advance the model-data fusion methods?

Lecturers:

Prof. Qingyan MENG, CAS, China Prof. Sorin HERBAN, UPT, Romania Prof. Dagang WANG, SYSU, China Prof. Sheng CHEN, CAS, China Prof. Zhenduo ZHU, UB, USA Prof. Liang GAO, UM, China Ir. Zhewen MA, PIESAT, China

Contact:

Mr. Z. LONG, UM, mc15002@umac.mo



澳門大學 UNIVERSIDADE DE MACAU UNIVERSITY OF MACAU

Call for applications:

https://forms.office.com/r/UqwFieWA5g

Deadline: July 18, 2022

No registration fee.

Free meals and tea/coffee break snacks. E-learning accounts and resources. Certificates from SKL-IOTSC and ANSO.



智慧城市物聯網國家重點實驗室(澳門大學) Laboratório de Referência do Estado de Internet das Coisas para a Cidade Inteligente (Universidade de Macau) State Key Laboratory of Internet of Things for Smart City (University of Macau)



Alliance of International Science Organizations





This training project is relevant to the SDG 11 -to "Make cities and human settlements inclusive, safe, resilient, and sustainable". The purpose of this training program is to share knowledge, skills, resources and codes in the field of remote sensing information processing and urban environment. The trainees will be able to learn the application of urban remote sensing techniques.

The instructors will systematically teach the theory on the urban environment and remote sensing, in combination with a large number of application cases and satellite systems. The course contents will focus on a complete chain of remote sensing science + technology + application with theory, application and analysis. It is expected to provide technical and theoretical references for trainees' scientific research.

How to apply the remote sensing technology to characterize the urban environment will be focused. The livability and urban environment can be described using the natural and anthropic factors, which includes the urban heat, urban green, urban humidity, infrastructure, urban cultural objects, etc. The course will also introduce how to apply radar and remote sensing techniques to conduct land surface modelling and hydrometeorological monitoring. The course will systematically introduce the state-of-the-art technologies of earth observation systems all over the world. The latest technical progress and applications of specific remote sensing techniques in water conservancy, land use, city construction, environment, disaster, meteorology, etc. Both global-scale satellite products and high-resolution products (e.g., the HJ-1, GF-3, GF-5, GF-6 satellite products) will be introduced.

The courses include classes, assignments, Q&As, quizzes and group projects. Participants are required to study the course content, submit assignments and participate in communication, quizzes, and group projects to receive a certificate of completion. The courses will be instructed by the professors from various countries, and they will also share their expertise on how to apply these techniques into their research.



漁門大學 UNIVERSIDADE DE MACAU UNIVERSITY OF MACAU







PROGRAMME

Remote Sensing Information Processing and Its Application in the Urban Environment

Mon, 8-Aug-2022

	TIME	SUBJECT	CONTRIBUTOR
AM	9:00 - 10:30	Lesson 1 A brief introduction to Remote Sensing Information Processing and Its Application in the Urban Environment	Prof. L. GAO
		Break	
	10:40 - 12:00	Lesson 2 PIE Remote Sensing Data Processing Software Introduction and Training	Ir. Z. MA
РМ	14:00 – 15:30	Lesson 3 PIE Remote Sensing Data Processing Software Introduction and Training	
	15:30 – 15:45	Break	Ir. Z. MA
	15:45 - 17:15	Lesson 4 PIE-Engine Geospatial Cloud Computing Service Platform Introduction and Training	

Tue, 9-Aug-2022

	TIME	SUBJECT	CONTRIBUTOR
AM	9:00 - 10:30	Lesson 1 Urban Green Space Remote Sensing	
	10:30 - 10:45	Break	Prof. Q. MENG
	10:45 - 12:15	Lesson 2 Urban Green Space Remote Sensing	
PM	14:00 – 15:30	Lesson 3 Introduction, concepts, and the importance of remote sensing techniques for Cultural Heritage Objects	
	15:30 – 15:45	Break	Prof. S. HERBAN
	15:45 - 17:15	Lesson 4 Introduction, concepts, and the importance of remote sensing techniques for Cultural Heritage Objects	

Remote Sensing Information Processing and Its Application in the Urban Environment

Wed, 10-Aug-2022

PROGRAMME

	TIME	SUBJECT	CONTRIBUTOR
	9:00 - 10:30	Lesson 1 Urban Heat Space Remote Sensing	
AM		Break	Prof. Q. MENG
	10:40 - 12:00	Lesson 2 Urban Heat Space Remote Sensing	
	14:00 – 15:30	Lesson 3 Technics, Technologies and Products of remote sensing techniques used in Cultural Heritage domain	
РМ	15:30 – 15:45	Break	Prof. S. HERBAN
	15:45 - 17:15	Lesson 4 Technics, Technologies and Products of remote sensing techniques used in Cultural Heritage domain	

Thu, 11-Aug-2022

	TIME	SUBJECT	CONTRIBUTOR
AM	9:00 - 10:30	Lesson 1 Interpretation of remote sensing and radar data: Data acquisition and data processing	
	10:30 - 10:45	Break	Prof. S. CHEN
	10:45 - 12:15	Lesson 2 Interpretation of remote sensing and radar data: Data acquisition and data processing	
РМ	14:00 – 15:30	Lesson 3 Rainfall nowcasting based on remote sensing/radar information and AI method	
	15:30 – 15:45	Break	Prof. S. CHEN
	15:45 - 17:15	Lesson 4 Simulating and predicting rainstorms based on remote sensing/radar information and AI methods	

PROGRAMME

Remote Sensing Information Processing and Its Application in the Urban Environment

Fri, 12-Aug-2022

	TIME	SUBJECT	CONTRIBUTOR
	9:00 - 10:30	Lesson 1 Urban Hydrology and Hydrological Modelling: Remote Sensing Application in Urban Hydrological Modeling	
AM		Break	Prof. Z. ZHU
	10:40 - 12:00	Lesson 2 Urban Hydrology and Hydrological Modelling: Remote Sensing Application in Urban Hydrological Modeling	
PM	14:00 – 15:30	Lesson 3 Hydrometeorological monitoring remote sensing application in real-time precipitation monitoring	
	15:30 – 15:45	Break	Prof. D. WANG
	15:45 - 17:15	Lesson 4 Hydrometeorological monitoring remote sensing application in real-time precipitation monitoring	

Sat, 13-Aug-2022

	TIME	SUBJECT	CONTRIBUTOR
АМ	9:00 - 10:30	Lesson 1 Green Stormwater Infrastructure/ Sponge City: Remote Sensing Application in Modeling Green Stormwater Infrastructure	
	10:30 - 10:45	Break	Prof. Z. ZHU
	10:45 - 12:15	Lesson 2 Green Stormwater Infrastructure/ Sponge City: Remote Sensing Application in Modeling Green Stormwater Infrastructure	
PM	14:00 – 15:30	Lesson 3 Land surface modeling: use of remote sensing products to improve land surface model	
	15:30 – 15:40	Break	Prof. D. WANG
	15:40 - 17:00	Lesson 4 Land surface modeling: use of remote sensing products to improve land surface model	
	17:00 - 17:30	Award ceremony Closing speech	UM and ANSO

INSTRUSCTOR

Remote Sensing Information Processing and Its Application in the Urban Environment



Prof. Qingyan MENG

Professor, Aerospace Information Research Institute, Chinese Academy of Sciences ,China

Prof. MENG has published more than 160 academic papers, 3 monographs, authorized and accepted 49 invention patents, 16 software copyrights and 19 awards. He serves as the Director-general assistant of Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, and Director of Earth Observation Application System Engineering Laboratory; Office Director of Demonstration Center for Space borne Remote Sensing, China National Space Administration; Expert of China Key Science & Technology Program 'High Resolution Observation System' Application System; Director of The Expert Group of Disaster Information Service System Planning of China Key Project 'China National Natural Disaster Space Infrastructure'; Expert committee member of National Ecological Protection Red Line Supervision Member of the Platform Project; Deputy secretary General of Digital City Professional Committee of China Urban Science Research Association; and invited professor of China Earthquake Administration. He has presided over more than 30 national projects from the Ministry of Science and Technology, the National Major Science and Technology Special Project.



Prof. Sorin HERBAN

Associate professor, Politehnica University of Timisoara, Romania

Prof. HERBAN professor PhD advisor at Politehnica University of Timisoara, Romania. He serves as the Vice Dean of Civil Engineering Faculty. He developed and implemented different measuring techniques and methodologies for creating digital models of land and surfaces. He has coordinated various projects and gained several research projects, namely: Protecting biodiversity and the importance of ecosystem services-an inter-generational approach (ECO-INTERAGE)"-Ministry of Environment, CA16219 Harmonization of UAS Techniques for agriculture and natural ecosystems Monitoring - COST Action where he is WG Leader, Waste management – adaptation strategies to climate Changes – Ministry of Research; Application of the terrestrial laser scanning for environmental processes and changes, ATLAS; Excellence in Photogrammetry for Open Cultural Landscape & Heritage Education, Contract as well as the Coordinator of the EEA interinstitutional accord – Romania Norway between Politehnica Timişoara University and Norwegian University of Life Sciences, Development of Urban Green Spaces Monitoring Technologies by Remote Sensing, Romania-China Bilateral.



Prof. Dagang WANG

Professor, Sun Yat-Sen University, China

Prof. WANG was awarded the sun Yat-sen University "100 Talents Plan". He is the Member of professional associations such as American Geophysical Union, American Meteorological Society and China Water Resources Committee. His current research interests focus on extreme climate change, land surface process simulation, climate effects of urbanization, meteorological and climate prediction, big data and assimilation algorithms. He has already published more than 80 SCI papers on top-tier SCI journals including "Nature Climate change" and "science advances". He is also the project leader of grants of Natural Natural Science Foundation Project.

INSTRUSCTOR

Remote Sensing Information Processing and Its Application in the Urban Environment



Prof. Sheng CHEN

Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences, China

Prof. CHEN was awarded the sun Yat-sen University "100 Talents Plan" and "CAS Pioneer Hundred Talents Program". His current research interests include AI-based nowcasting, warn on forecast based on NWP, quantitative precipitation estimation (QPE) based on radar and satellite observations, hydrology modeling and forecast. He has published 70+ journal and conference papers. He is also the project leader of two grants related to dual polarimetric radar QPE and applications.



Prof. Zhenduo ZHU

Assistant professor, University at Buffalo, the State University of New York, USA

Prof. ZHU is an assistant professor in Environmental and Water Resources Engineering at University at Buffalo, the State University of New York, since 2016. Before joining UB, he received his MS and PhD degrees at the Ven Te Chow Hydrosystems Laboratory from the University of Illinois at Urbana-Champaign, and his BS degree in Hydraulic Engineering from the Tsinghua University, China. His research interests span city, watershed, and Earth system scales using both physics-based and machine-learning hydrologic and water quality modeling. He applies remote sensing data for integrated urban water management. Dr. Zhu received multiple awards from several academic associations, and more than 40 papers and more than 50 oral/poster presentations at international conferences. He is an editorial board member of Frontiers in Sustainable Cities and leading guest editor of special issue of Water, "Integrated Modelling of Urban Waterway Systems".



Prof. Liang GAO

Assistant professor, University of Macau, China

Prof. GAO received her PhD (16') degree from the Hong Kong University of Science and Technology, MS (11') and BS(09') degrees from Tsinghua University. She was awarded the third prize of Zhejiang Water Science and Technology Innovation in 2015 and 2016. She has published more than 20 Journal papers. She is now the editorial board of "Georisk" (SCI journal, JCR Q1/Q2). She has been awarded research grants from the Macao Science and Technology Development Fund, Shenzhen-Hong Kong-Macau Science and Technology Program, the University of Macau Fund and the Hong Kong and Macao Marine Research Center.



Ir. Zhewen MA

Engineer, PIESAT Information Technology Co., Ltd.,China

Ir. MA received his Master's Degree in Environmental Engineering in Environmental Engineering at University of Western Australia in 2016. After joining PIESAT, he has been responsible for the international promotion of PIE software and industrial solutions in many fields, such as in remote sensing application, education, smart agriculture, natural resource management, meteorological monitoring, disaster risk reduction, drone industries. He has participated in the development, customization and localization of many PIE software (English version) modules and PIE-Engine remote sensing cloud computing platform. He used to provide offline professional software training and consultation services in China, Singapore, Nepal, Sri Lanka, Bangladesh, Egypt, and in online training for participants from over 30 countries.



To apply, please visit: https://forms.office.com/r/UqwFieWA5g

Please enter your real information.

Upon review of your application, an email will be sent confirming your acceptance of the programme and invitation.



Application Deadline: July 18, 2022

Location: Zhuhai, China

FEES AND CONCERN

- Both on-line or face-to-face classes are offered. Please just choose one.
- The trainees who fulfill the course requirements will be awarded a certificate from SKL-IOTSC(UM) and ANSO.
- An E-learning account will be assigned to the trainee for downloading and uploading files.
- Free meals and tea/coffee break drinks & snacks will be provided for the face-to-face attendees.
- No registration fee is required.



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