RESEARCH SEMINAR

DEPARTMENT OF GEOGRAPHY & RESOURCE MANAGEMENT
THE CHINESE UNIVERSITY OF HONG KONG

Envisioning Risk-Resilience-Sustainability Nexus under Climatic & Environmental Changes: Leveraging Earth Observation Data, Integrated Geospatial Tools, GeoAI and Machine Learning

19 February 2025 (Wed)
10:00 – 11:30 am (UTC+8)
Rm 221, Chen Kou Ben Building, CUHK

With an increased global burden of hydro-meteorological extreme events (i.e., flooding, typhoons, droughts, and extreme heat etc.) in terms of their spatially heterogeneous impacts, there is a dire need to provide innovative interdisciplinary solutions from a long-term sustainability perspective. This talk would emphasize the necessity of data-driven approaches to enhance decision-making processes and informed resource allocation. The presentation will showcase how Earth observation data can be effectively utilized in conjunction with integrated geospatial tools to analyze, profile, and mitigate risks to hydro-meteorological hazards.

Key methodologies discussed will include the application of GeoAI and machine learning techniques for processing complex datasets at scale, which facilitate improved responses to disasters. Through case studies, the talk will illustrate the potential of these advanced technologies in identifying vulnerable regions, exploring their geographical disparities, identifying spatial patterns, highlighting driving factors, and developing adaptive strategies for resilience.

The overarching goal is to inspire researchers and practitioners to adopt innovative, technology-driven approaches that promote sustainable development amid rapid environmental changes and extreme events. By integrating diverse data sources and analytical methods, this talk aims to provide a comprehensive framework for understanding and addressing the multifaceted challenges posed by climate change and environmental degradation.

Muhammad Sajjad
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Dr. Sajjad is a Research Assistant Professor in the Faculty of Architecture at the University of Hong Kong. He specializes in geospatial applications to environmental and urban systems modelling to explore risk-resilience-sustainability nexus. Through his multi-disciplinary background and diverse experiences stemming from academia and industry, he maintains research work in interdisciplinary climate research (Integrated Physical science, Social Aspects, and Technology) to provide references and support for informed decision-making and resource allocation. Consequently, Dr Sajjad's work has resulted into 35+ scholarly articles published in the top-tier journals in the fields of geography, geo-information science (RS & GIS), GeoAI, spatial machine learning, and disaster risks and resilience under climate change.

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