

RESEARCH SEMINAR

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

Spatially Explicit Artificial Intelligence For Geographic Data Science

7 Dec 2021 (Tue)
2:00–3:30 pm (UTC+8)

ZOOM ID: 973 6037 5790
ZOOM Passcode: 598320

Despite all the successful artificial intelligence/machine learning (AI/ML) stories, most of the machine learning models neglect the geospatial aspect which in fact plays an important role in many tasks. Professor Mike Goodchild said, 'A model is said to be spatially explicit when it differentiates behaviours and predictions according to spatial locations'. Based on this idea, we propose a new generation of AI models – spatially explicit artificial intelligence which focuses on using spatial inductive bias and spatial thinking to redesign the existing state-of-the-art AI/ML models to achieve better model performance on geospatial-related tasks. In this talk, we discuss how to design spatially explicit AI models for different geospatial tasks including geo-aware species fine-grained recognition, point-of-interest (POI) type prediction, geographic question answering, poverty prediction, and so on. These tasks cover various geospatial domains including ecology, urban data science, geospatial semantics, geodemography, and so on.

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Gengchen is currently a postdoctoral scholar at Stanford AI Lab, Stanford University, working with Professor Stefano Ermon on several geospatial machine learning and computation sustainability projects. He got his PhD degree in GIScience from UC Santa Barbara, under the guidance of Professor Krzysztof Janowicz and his BS degree in GIS from Wuhan University. His research mainly focuses on Spatially Explicit Machine Learning, GeoAI, Spatial Data Science, Geographic Knowledge Graph, and Urban Big Data Analytics. Until now, Gengchen has published 42 peer-reviewed scientific publications in top-tier journals or conferences and won two best paper awards.



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