

Guangyue Li

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EDUCATION

Wuhan University

Master of Science in Computer Technology

Supervisor: Prof. Luliang Tang

Wuhan, China

Sep 2022 – Jun 2024 (expected)

China University of Geosciences

Bachelor of Science in Spatial Information and Digital Technology

GPA: 3.90/5.0, Rank: 2/59, top 5%

Wuhan, China

Sep 2018 – Jun 2022

Courses: Probability, Linear Algebra, Data Structure, Algorithms, Database, Spatial Analysis, Geographic Information System

PUBLICATIONS AND MANUSCRIPTS

- [Information Fusion] *Towards integrated and fine-grained traffic forecasting: A spatio-temporal heterogeneous graph transformer approach (Major Revision)*
IF: 18.6, JCR: Q1, CS: 38.6, 2023
Guangyue Li, Zilong Zhao, Xiaogang Guo, Luliang Tang*, Huazu Zhang, Jinghan Wang
- [IEEE Trans on ITS] *Towards complex urban traffic forecasting: A fully attentional approach enhanced by graph representation (Under Review)*
IF: 8.5, JCR: Q1, CS: 11.6, 2023
Guangyue Li, Zilong Zhao, Yang Chen, Luliang Tang*, Jinghan Wang, Xu Chu, Chaokui Li
- [Information] *Combine-Net: An Improved Filter Pruning Algorithm. Information. 2021; 12(7):264.*
IF: 3.1, ESCI, EI <https://doi.org/10.3390/info12070264>
CS: 5.8, 2021
Jinghan Wang, Guangyue Li*, Wenzhao Zhang

RESEARCH EXPERIENCE

• Integrated and Fine-grained Traffic Forecasting for Road Segments and Intersection Turns

Supervisor: Prof. Luliang Tang

Wuhan University, Nov 2022 – July 2023

- Defined a Heterogeneous Road network Graph (HRG) to comprehensively represent the topological structure of the complete traffic network, incorporating different types of nodes and edges to depict roads and turns, as well as their synergistic relationships.
- Developed a Heterogeneous Spatial Embedding (HSE) module to characterize the heterogeneous road network information from attributes, significance, and relevance. Leveraging HSE, spatial transformer can effectively explore the intricate spatial correlations.
- Proposed an Adaptive Soft Threshold (AST) module to alleviate the influence of high temporal fluctuation. Integrated with the AST, the proposed temporal transformer enhanced its capacity to capture complex temporal correlations in the presence of noise.

• Complex Urban Traffic Forecasting based on Graph Representation and Deep Learning

Supervisor: Prof. Luliang Tang

Wuhan University, Dec 2021 – Nov 2022

- Proposed significance encoding and relevancy encoding to compensate the attention mechanism's deficiency in complex road network representation, characterizing urban traffic networks from local and global perspectives.
- Developed a spatial attention to uncover the relationship between any pair of roads, dynamically modeling the geo-parcel-based traffic pattern correlations that do not depend on the road network.
- Designed a multi-scale residual perception (MRP) based on shortcut connections to reconcile the competing influences of long-term periodicity and short-term variability, placing an emphasis on the fluctuating traffic states.

SKILLS SUMMARY

- **Language:** Mandarin (Native), English (Fluent, Preparing for IELTS, CET-6)
- **Software:** Python, QGIS, ArcGIS, PostGIS, Neo4j, MongoDB, C++
- **Technologies:** PyTorch, TensorFlow, Matplotlib, Numpy, Pandas, Geopy, Networkx, GeoPandas

AWARDS AND HONORS

• Scholarship

1. Presidential Scholarships of China University of Geosciences (Top 5%) Sep 2019
2. Outstanding Student at China University of Geosciences Sep 2019
3. Advanced Individuals in Innovative Practices at Wuhan University Mar 2023

• Competition

1. Second Prize of China Graduate Student Mathematical Modelling Competition Oct 2022
2. Provincial Second Prize in National University Student Mathematical Modelling Competition Sep 2020