

Xiaoyi Wu

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EDUCATION

University of Pennsylvania

Sep 2021-Jun 2022

Master of Urban Spatial Analytics

- Main Courses: Deep Learning and Remote Sensing, Multimodal Transportation, Artificial Intelligence, Introduction to Transportation Planning, Spatial Statistics, Game Theory, Public Policy Analytics
- Honors: Merit-based Scholarship, 2021-2022

China University of Geosciences (Beijing)

Sep 2016-Jun 2020

Bachelor of Science, major in Geology

- Honors: Merit-based Scholarship (top 10%, three times), 2017-2019
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RESEARCH EXPERIENCE

Wharton Political Lab/ESG Analytics Lab at University of Pennsylvania

Jun 2022-Present

Spatial Data Analyst at Wharton School | Supervised by [Prof. Witold Henisz](#)

- Conducted large-scale static/interactive web-scraping from more than 10,000 news articles and Twitter
- Processed text analysis based on NLP techniques, calculated Goldstein scale between co-mentioned entities, detected clustering community based on Hamiltonian, and implemented parallel computation with HPCC
- Participated in the project on *Digital Twin of Houston City*, processed the cloud point LiDAR data to generate ground and building digital surface model (DSM), digital elevation model (DEM), tree canopy DSM, and extracted 3D city ground objects

Bio-inspired Artificial Intelligence for Optimizing Multi-modal Urban Transportation

Jun 2022-Present

Research Assistant at Télécom SudParis | Supervised by [Prof. Andrea Araldo](#)

- Developed C++ codes for bi-level optimization of multi-modal transportation network in Paris: optimized the layout and frequency of buses and metro lines based on Particle Swarm Optimization in the high-level architecture, and focused on the Dial-a-Ride Problem based on large neighborhood search algorithm in low-level architecture
- Conducted experiments with various movement volumes to model realistic scenarios, and improved the network performance with 35.0% less fuel cost and 24.7% less vehicle number
- This work will be submitted to *Computers & Operations Research*

Landslide Identification using Machine Learning with Generative Adversarial Networks

May 2022

Independent Research at the University of Pennsylvania

- Applied Generative Adversarial Networks (GAN) to create synthetic landslide data and add training dataset size
- Utilized Principal Component Analysis to visualize multidimensional data and Random Forest to analyze feature importance
- Predicted the occurrences of landslide and landslide types in Hong Kong with Random Forest, Support Vector Machine, K-nearest Neighbors, and Linear Regression models, evaluated the GAN capability by comparing the accuracy and F1 score
- This work was presented at *AutoCarto 2022*

COVID-19's Impact on Human Mobility and Social Equity in New York City

Jan-May 2022

Capstone Project at the University of Pennsylvania

- Wrangled, cleaned, and processed monthly POI data from SafeGraph and socio-economic data from American Community Survey, constructed origin-destination matrix with inflow/outflow movement volume on tract level based on Python

- Quantified the heterogeneity in travel purpose and travel amount at different pandemic stages under various contexts, and conducted time-varying coefficient analysis to identify social-economic factors associated with mobility changes
- This work has been accepted by the **2023 AAG Annual Meeting**

Multi-agent Deep Reinforcement Learning

Sep 2020-Sep 2021

Research Assistant at Institute of Automation, Chinese Academy of Sciences | Supervised by [Prof. Haifeng Zhang](#)

- Conducted research on reinforcement learning in multi-task cooperative game, investigated benchmark environments, and programmed grid-world experiment environments and Proximal Policy Optimization algorithms for joint optimization
- Conducted investigation on reinforcement learning's application in autonomous driving, and implemented Soft Actor Critic for continuous motion planning on highway scenarios
- Improved baseline algorithms such as Double Q Learning, and simulation environments such as Snakes for Jidi online evaluation platform

INDUSTRY EXPERIENCE

Kuayue Express

Mar-Sep 2020

Data Analyst Intern at Automated Dispatching System Department

- Responsible for optimizing the dispatching system, and developing rule-based routing, scheduling, and dispatching algorithms to improve automated delivery services
- Built time-series regression model to predict shipping weights, and analyzed various factors' impacts on operation performance such as holiday and weather
- Visualized spatial-temporal pattern of dispatching performance and delivery tasks, and identified the inefficient scheduling events

CONFERENCE

Xiaoyi Wu, Anran Zheng. "Landslide identification in Hong Kong using generative adversarial networks based on inventory data". AutoCarto 2022.

Xiaoyi Wu, Hao Yang. "The Impact of COVID-19 on Human Mobility and Social Equity in New York City". AAG Annual Meeting 2023.

SKILLS

- English: **IELTS: 7.0** | **GRE: 156+167+3.0**
- Programming: **Python** | **JavaScript** | **R** | **C++** | **SQL**
- Software: **ArcGIS Pro** | **ENVI** | **Google Earth Engine** | **SSH** | **High Performance Computing**