Youshuang Hu

A second-year MS student in Environmental Policy and Urban Planning at Tufts University interested in Geospatial Science, Geographical Information Science (GIS), Remote Sensing, Data Visualization, and Urban Planning.
Please find more information through GitHub page: YoushuangHu.github.io

Work Experience:

GIS Analyst / Data Lab Assistant | Sep.2022 – Current
Tufts University, Tufts Technology Services (TTS)
- Responsible for providing personalized GIS services to students, staff, and faculty members.
- Created and integrated GIS data layers using geospatial software tools and digitized new spatial datasets.
- Facilitated 100 + students, professors and staffs' research related to GIS, statistics, data analysis and visualization.
- Expanded the university's GIS resources and capabilities by acquiring and integrating new spatial datasets that were essential for academic research and teaching.

Research Internship, Data Scientist / Geospatial Analyst | Jan.2023 – Current
Tufts University, Data Intensive Studies Center (DISC)
- Conducted Data Science Research about 'Bioregional Digital Twins in Casco Bay' as a Spring 2023 Research Intern.
- Collected data on Casco Bay and utilized several spatial and machine learning models to forecast future precipitation, sediment levels, and weather patterns in the area. The resulting models achieved an overall accuracy of up to 0.6.
- Collaborated with SustainaMetrix company to visualize the plume emanating from the East End Wastewater Treatment Facility and its impact on nearby seagrass meadows.

Geographical Information System (GIS) Internship | May.2019 – Sep.2019
ChengDu Institute of Planning & Design
- Extracted and analyzed spatial data, organized basemap data, created GIS posters, and managed spatial datasets.
- Compiled and organized geographic information from over 1029 sources into a user-friendly format, creating more than 10 web-based interactive mapping applications and geographical-based maps.
- Demonstrated proficiency in creating and editing geographic datasets, utilizing geo-processing tools, and contributing to GIS operations under the head GIS analyst.

Teaching Assistant, Advance GIS | Jan.2023 – Current
Tufts University, Urban and Environmental Policy and Planning Department
- lectured workshops, graded assignments, and provided tutorial assistance to students.
- Helped to design three tutorials for the Advanced GIS course related to geodatabases, SQL, and spatial statistics.
- Guided 13+ students on GIS poster and ArcGIS StoryMap production and spatial dataset access.

Contact:

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Skills:

Geographic Techniques: ArcGIS pro, ArcMap, QGIS, ENVI, Geoda, Carto, kepler.gl, Google Earth Engine.

Programming Languages: Python (*Jupyter Lab/Notebook, PyCharm*), STATA, R, SQL (*MySQL, PostgreSQL*), HTML/CSS.

Data Visualization: R (*Ggplot, Ploty, Shiny, Rayshader*), STATA, Tableau, PowerBI, and Python (*Matplotlib, Pandas, Seaborn*).

Certificates:

Geographic Information Science (GIScience) certificate
Spatial Data Analytics certificate

Education:

Tufts University | Medford, MA
Sep.2021 – May.2023
M.S. in Environmental Policy and Urban Planning.

Publication & Conference:

Yang, Ying; Wu, Grace; **Hu, Youshuang**; and Monahan, Kyle. "Machine learning detection of plastic tarps on roofs damaged by Hurricane Maria in Puerto Rico, with a focus on healthcare infrastructure." American Association of Geographers. Virtual Poster Session. (2023).

Research Experience:

Machine Learning Research Assistant | Sep.2022 – Feb.2023
Tufts University, Tufts Technology Services (TTS)

- Poster Link
- Conducted research on the detection of plastic tarps on roofs damaged by Hurricane Maria in Puerto Rico with a focus on healthcare infrastructure.
- Extracted features / labelled features for 500 + classes using ArcGIS pro.
- Implemented a supervised learning model utilizing a maximum likelihood classifier to accurately detect tarps and identify them within final images, achieving an overall model accuracy rate of over 0.8.

Natural Disaster Research Assistant | Sep.2022 – Feb.2023
Tufts University, Urban and Environmental Policy and Planning

- Slides Link
- Conducted research on vulnerability in two-way disaster communication by analyzing Twitter and 311 data during Hurricane Marco and Hurricane Laura in Orleans Parish, New Orleans, Louisiana.
- Explored how the frequencies of tweets and 311 calls changed over time in relation to the hurricanes' movements and used hurricane models to predict potential disaster risks in the City of New Orleans.
- Developed a risk index that identifies the most vulnerable communities in Orleans Parish facing disaster risks that lack disaster communication resources.
- Utilized Python to create a communication risk map based on spatial patterns observed in the data.
- Employed Kernel Density Estimate method in Python to perform temporal and spatial analysis of Twitter data and 311 data.
- Visualized the results using Kepler.gl for clear and concise communication of findings.

Remote Sensing Research Assistant | Sep.2022 – Current
Tufts University, Urban and Environmental Policy and Planning

- Conducted spatial data analysis and remote sensing techniques to identify areas affected by the 2018 tsunami and earthquake in Palu City, Indonesia, as part of a case study.
- Utilized vegetation, soil, and water spectral indices to map areas affected by the tsunami based on its characteristics.
- Applied threshold analysis to identify a specific set of parameters that enable the rapid detection of tsunami-inundated areas in Sentinel-2 pre-tsunami and post-tsunami images.

Remote Sensing Research Assistant | Sep.2022 – Dec.2022
Tufts University, Urban and Environmental Policy and Planning

- Conducted geospatial analysis using ENVI software to explore the geographic characteristics of Wellfleet Bay, MA, by implementing various spectral indices such as NDVI, EVI, NDWI, and NDBI.
- Employed supervised and unsupervised classification techniques in Python and ENVI to identify different urban area types and inform future urban planning in Wellfleet Bay, MA.

Relevant Coursework:

Tufts University | GPA 3.8
Advanced GIS
Advanced Remote Sensing
Urban Analytics & Visualization
Data Science for Urban Sustainability
Spatial Statistics
Cities Space, Place & time
Field Projects: Policy & Planning
Quantitative Reasoning
Foundations of Public Policy
Introduction to Machine Learning
Database Systems
Algorithms