JIAHAO XIA

+1(201) 349-0703 ⋄ New Brunswick, NJ
jx198@soe.rutgers.edu

OBJECTIVE

PhD candidate with major in Civil Engineering, seeking machine learning engineer internship jobs.

EDUCATION

PhD of Civil and Environmental Engineering, Rutgers University — Excepted 2024
Relevant Coursework: Machine Vision and Software Engineering Web Applications.

Master of Photogrammetry and Remote Sensing, Wuhan University — 2016 - 2019
Relevant Coursework: Image Processing and Analysis, Image Interpretation and Pattern Recognition.

Bachelor of Geodesy and Geomatics, Wuhan University — 2012 - 2016
Relevant Coursework: C Programming Language, Object-Oriented Programming, Computer Graphics, Data Structure and Database.

SKILLS

Advanced Proficiency	Python, PyTorch, TensorFlow, HTML, Javascript, CSS, Git
Advanced Proficiency	Mobile Mapping System (MMS), Z+F Scanner, Faro Scanner
Intermediate Proficiency	C++, R, Matlab, ArcGIS

RESEARCH AND PROFESSIONAL EXPERIENCE

Principal Member — May 2023 - September 2023
Rutgers University — *New Brunswick, NJ*
Segment Anything Model for Pedestrian Infrastructure Inventory: Assessing Zero-Shot Segmentation on Multi-Mode Geospatial Data

- Rendering 3D point cloud into 2D images.
- Zero-shot image semantic segmentation using Segment Anything Model.
- Project 2D semantic segmentation results to 3D point cloud and analyze geometry features of pedestrian infrastructure.

Principal Member — June 2022 - April 2023
Rutgers University — *New Brunswick, NJ*
Weak Supervised 3D Object Detection in Monocular Video using 3D Environment Scanning Guidance

- Camera calibration and project 3D point cloud into the image plane.
- Multiple Objects Tracking using YOLOv5 and StrongSort.
- 3D Bounding Boxes estimation using 2D box constrains.

Principal Member — June 2021 - May 2022
Rutgers University — *New Brunswick, NJ*
Geo-localization of Flood Images

- Build geo-tagged image gallery using Google Street View, google satellite map and Google earth-3D buildings.
- Extract features for each image in the gallery with DCNNs (i.e., NetVLAD, DOLG, DELG).
- Extract features for query image and geo-localization through retrieve the similar geo-tagged images in the gallery.

Principal Member — Aug 2020 - Apr 2021
Rutgers University — *New Brunswick, NJ*
An Automatic and Scalable Method for Extracting Lowest Floor Elevation (LFE) from Mobile Point Cloud Data

- Project 3D point cloud into 2D density, intensity and height map.
- Train YOLOv5 to detect building components (i.e., door, window and stair) on the intensity map and then estimate LFE using detected components and height map.

Principal Member Sept 2019 - June 2020
Rutgers University *New Brunswick, NJ*
Precise Indoor Localization with 3D Facility Scan Data

- Collect 3D facility data using static laser scanner.
- Propose a scalable approach to generate high-quality images with reference poses from laser scan data.
- Develop a hierarchical image-based indoor localization algorithm.

Principal Member Dec 2017 - Oct 2018
Wuhan University *Wuhan, China*
Estimating the Historical PM2.5 Concentrations (1957-2014) in China with Machine Learning Methods

- Developed models (ANN, SVM, RF and spatial-temporal linear mixed effects) based on the physical relationship between PM2.5 and meteorological factors.
- Evaluation, time series analysis, and driving forces analysis of historical PM2.5.

PROJECTS

Point cloud and image labeling tool. Build a web tool to label building attributes based on point cloud and image data using Flask. Point cloud is visualized in browser using Potree format. The tool is used to extract FFE (First Floor Elevation) and Building Diagram of houses in flooding zone for New Jersey OEM.

Web-based stock forecaster. Built a web tool to assist users with stock investments using Flask. Collect real-time stock price data from Yahoo Finance and build models, i.e, Bayesian curve fitting, SVM and ANN, to predict the trends of the stock. (Mar 2020 - May 2020)

PUBLICATIONS

- **Xia, Jiahao**, Gavin Gong, Jiawei Liu, Zhigang Zhu, and Hao Tang. "Segment Anything Model for Pedestrian Infrastructure Inventory: Assessing Zero-Shot Segmentation on Multi-Mode Geospatial Data." (under review).
- **Xia, Jiahao**, and Jie Gong. "Computer Vision based First Floor Elevation Estimation from Mobile LiDAR Data." Automation in Construction. (under review).
- Younes, Hannah, Clinton J. Andrews, Robert B. Noland, **Jiahao Xia**, Song Wen, Wenwen Zhang, Leigh Ann Von Hagen, Dimitri Metaxas, Jie Gong. "The traffic calming effect of delineated bicycle lanes." TRB Annual Meeting (2023).
- Josephs, Holly, Yifan Wang, **Jiahao Xia** and Jie Gong. "Urban digital twin based decision support for housing rebuilding choices in catastrophically flooded communities." i3CE 2023 Conference Proceedings. (2023).
- Younes, Hannah, Wenwen Zhang, Clinton Andrews, Song Wen, **Jiahao Xia**, Leigh Ann Von Hagen, Sean Meehan, Robert B. Noland. "Tactical Urbanism Experiments to Enhance Road User Safety in Asbury Park, NJ." TRB Annual Meeting (2022).
- **Xia, Jiahao**, and Jie Gong. "Precise indoor localization with 3D facility scan data." Computer-Aided Civil and Infrastructure Engineering 37.10 (2022): 1243-1259.
- Huang, Xin, **Jiahao Xia**, Rui Xiao, and Tao He. "Urban expansion patterns of 291 Chinese cities, 1990–2015." International Journal of Digital Earth 12, no. 1 (2019): 62-77.