Mengyang Guo

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EDUCATION

Rutgers University, New Jersey, United States — **Current**
Doctor of Philosophy — GPA: 3.94/4.00

Rutgers University, New Jersey, United States — **Graduated Jan 2016**
Master of Science — GPA: 4.00/4.00

Southeast University, Nanjing, China — **Graduated May 2013**
Bachelor of Engineering in Energy and Environment — GPA: 3.23/4.00

SKILLS

Software	Point Cloud (Autodesk ReCap, MicroStation, Cloud Compare, Qt, MeshLab), BIM (Revit, ArcGIS, Navisworks, AutoCAD), Flood Modeling (ADCIRC, SMS)
Programming & Database	Python, JavaScript (Potree, Leaflet, Cesium), PHP, MySQL, MATLAB, C++
LiDAR System	Faro Static LiDAR, Velodyne Moblie LiDAR, Z+F Profiler Laser Scanner
Others	AWS (EC2, S3, IAM), Azure, Deep Learning, FLIR Level 1 Thermography Certification

PROFESSIONAL EXPERIENCE

Research Intern | Bentley Systems & NSF — **Jan - Jun 2020**

- Collected, processed, and organized Mobile LiDAR (point cloud and panoramic imagery) from NJ coastline.
- Detected single family houses and extract property structure information from street view imagery using TensorFlow.
- Extracted property elevation data by linking street view imagery with LiDAR point cloud.
- Created a model to automatically extract coastal property elevation information for large-scale flood risk analysis purpose.

RELEVANT PROJECTS

NJ Transit: Use of UV for Public Transit Sterilization during COVID19 (2020):

- Collected, processed raw static LiDAR data, and generated Revit model for NJ Transit Train and Buses.
- Publicized a project website for 3D UV model visualization and data access for researcher teams.

Hurricane Ready Cloud (HRC): Develop a Data infrastructure for disaster-related big spatial data sets (2016-2020):

- Collected and processed over 25 TB of disaster data (Mobile LiDAR, Field Survey and Drone Imagery) for three hurricanes events (Hurricane Sandy, Hurricane Harvey, and Hurricane Michael) and organized the data into databases.
- Developed the Hurricane Ready Cloud (HRC) portal, configured it on the AWS, and developed the functionality designed in HRC portal (e.g., Inundation Risk Information System, Image-based Elevation Extraction, View Your Risk, and Future Hurricane Impact Analysis).
- Developed large-scale property elevation extraction system and verified the efficiency of the system with official Elevation Certificates (ECs) document on NJ shoreline properties.
- Developed and verified the cloud-based virtual hurricane damage assessment with 553 structural damage assessments on Hurricane Harvey data sets.

PVSC: Sewerage Line Modeling

- Collected and processed static LiDAR for PVSC property and convert the collected point cloud/CAD drawing to Revit 3D model.
- Georeferenced Revit model to ArcGIS and Web Viewer for sewerage line localization.

FEMA: Post-Sandy Mobile Mapping Study (2016)

- Supported research team with Mobile-LiDAR and GPS system setup and designed 17 days of data collection trips.
- Supported Mobile LiDAR collection for over 2000 miles of NJ coastline in A and V flood zone.

BPU One Call: Online Learning and Certification Application System (2018)

- Designed the knowledge learning material and 156 exam questions from official guidance and manuals.
- Developed a web-based exam system using PHP and MySQL that provide means for assessing excavators' knowledge of underground damage prevention before and after taking training.
- Designed the company accounts for group users from state-wide gas companies and award users with certificates when they meet the knowledge requirement and passing the exam.

Near-Miss Detection: Computer Vision for Urban Planning (2017)

- Developed computer vision-based vehicle and pedestrian detection system using background subtraction algorithm via python.
- Realized the fusion of Mobile LiDAR and CCTV traffic camera for 3D vehicle/pedestrian position extraction and Near-miss estimation.

SFMTA: NDT testing of Yerba Buena Tunnel, San Francisco (2016)

- Collected and processed static LiDAR and Infrared Imagery for over 100 meters of Yerba Buena Tunnel internal surface.
- Generated 3D NDT thermal model and realize Infrared-based tunnel subsurface defects (leaks, delamination) detection.

HUD: Cost-effective Detection of Multi-Family Housing-related Health and Safety Hazards, New York (2013-2015)

- Collected and processed LiDAR and Infrared data for 29 families and generated 3D thermal model of two surveyed buildings.
- Realized infrared-based multi-family building performance analysis and energy simulation based on the estimated R-value from infrared thermography.

Coursework

BIM	Introduction to GIS	Computer Vision
Software Engineering and Web Application	Advanced Data Mining	Programming Finance (C++)

Publications

1. Guo, M. (2016). Spatially resolved infrared imaging for building performance evaluation.
2. Zhang,T., Guo,M., Jin, P., Ge,Y., Gong, J. (2020). Traffic Video Analytics with Fast Recalibration Assisted by 3D Infrastructure Data. Accepted by Transportation Research Record by April 24th 2020.
3. Wang, Z., Hu, H., Guo, M., & Gong, J. (2019). Optimization of Temporary Debris Management Site Selection and Site Service Regions for Enhancing Post-disaster Debris Removal Operations. Computer-Aided Civil and Infrastructure Engineering, 34(3), 230-247.
4. Thomas, N., Calderön, L., Senick, J., Sorensen-Allacci, M., Plotnik, D., Guo, M., ... & Mainelis, G. (2019). Investigation of indoor air quality determinants in a field study using three different data streams. Building and Environment.
5. Zhou, Z., Gong, J., & Guo, M. (2015). Image-based 3D reconstruction for post-hurricane residential building damage assessment. Journal of Computing in Civil Engineering, 30(2), 04015015.