Fengyan Zhang

20 March 1999
Research Assistant

Contact

+31 613499820
fengyan_zhang0320@outlook.com
fengyanzhang.nl | LinkedIn
Rotterdam, The Netherlands & Aachen, Germany

Education

Master's Degree
TU Delft | Geomatics
Thesis: *Snap rounding polygons with a triangulation*
Sep. 2021 – Jun. 2023

Bachelor's Degree
Southeast University (Project 985)
Geographic Information Science
Thesis: *Pedestrian travel trajectory generation based on Fréchet distance*
Sep. 2017 – Jun. 2021

Exchange Program
University of Minnesota
Geographic Information Science, transport planning and Cartography
Jul. 2019 – Aug. 2019

Technical & Soft Skills

C++ Java Python JavaScript SQL
CGAL (Computational Geometry), GDAL (Geospatial Data), LASTools (point cloud), nlohmann-json (JSON for modern C++), CMake, Linux (Ubuntu, WSL), LaTeX, QGIS, ArcGIS, PostgreSQL/PostGIS, Visual Studio, MeshLab, VS Code CloudCompare.
English (working proficiency), Dutch (beginner), German (beginner)

Passions

Snowboarding, piano, jogging novel writing (*The Frontier*).

Summary

A research assistant at RWTH Aachen, with a Master's degree in Geomatics from TU Delft, specializing in the development of algorithms and software solutions for processing and analyzing complex 2D and 3D geometries. Proficient in advanced programming with C++ and Python. During my master's thesis, I developed *snapoly*, a prototype implementation for snap rounding polygons with constrained Delaunay triangulation. I also possess experience with IoT (Internet of Things)-based systems, including distributed sensor networks for data collection, storage, and visualization. My focus lies in spatial data processing and database management, 3D modeling and reconstruction, and urban innovation.

Relevant Projects (Public Access)

- snapoly: Algorithm implementation of my master thesis: *Snap rounding polygons with a triangulation*.
- CityJSON: Implementation of calculating building volumes, number of building floors, area, and orientation of roof surfaces.
- geoCFD: Preprocess the geometry for CFD simulation - remove internal faces between adjacent buildings. This is developed as the Nef Polyhedra method for the MSc Geomatics Synthesis Project *facesBgone*.
- BIMConvertToGeo: Convert a building information modeling (BIM) model, specifically an IFC file, into a CityJSON file.
- Reconstruct 3D Geometry: 3D geometry reconstruction based on the open-source project - Easy3D.
- LCP Runoff modeling: Implementation of the least cost path algorithm (LCP) for calculating flow direction and flow accumulation.
- Spatial interpolation: Implementation of Nearest Neighbor (NN) / Inverse Distance Weighting (IDW) / Triangulated Irregular Network (TIN) and Laplace interpolation.

Professional Experience – Research Assistant

Geoinformation and Geodetic Institute, RWTH Aachen | Nov. 2023 – present

- Creating secure and efficient interfaces for real-time data transmission and visualization via OGC SensorThings API and MQTT protocol.
- Developing a system to integrate monitoring data into a Building Information Modeling (BIM) environment using linked data models.
- Collaborating with industry partners to refine workflows and optimize software extensions for hydraulic structure monitoring.
- Researched the integration of the MQTT protocol with geospatial properties and authored a conference paper for FIG 2025.
- Preparing questions, delivering exercises, providing explanations and solutions for Distributed and Web GIS and Geodatabases courses.

Extracurricular

Operation Management Department Intern, Northwest Regional Corporation, Radiance Group. Jul. 2020 – Sep. 2020.
Transportation Management Intern, Gansu Jinchang Transportation Authority.