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EDUCATION

B.Sc., Remote Sensing Science and Technology (June 2024 Expected, GPA: 3.59/4.0), Wuhan University, Wuhan, Hubei, China

SELECTED COURSE WORK

- *GIS and image processing*: Foundations of Geographic Information System, Design and Development of Geographic Information Engineering, Web GIS, Computer Vision and Pattern Recognition
- *Spatial science*: Spatial data Analysis, Spatial Database, Error Processing of Spatial Data
- *Remote sensing*: The Application of Remote Sensing in Urban Planning, Principles and Methodologies in Remote Sensing, Photogrammetry

PROFESSIONAL EXPERIENCES

Changjiang Water Resources Commission
Central Station of Yangtze Basin Soil and Water Conservation Monitoring (Oct 2023 - Dec 2023)

- Utilized ArcGIS and Soil Erosion Calculation and Analysis Platform to process data related to vegetation cover and soil erosion in 13 key prevention and control areas.
- Adjusted data and conducted data validation to ensure data accuracy and successfully ingested data into the database.
- Generated national-level data, including the Chishui River basin and the middle reaches of the Yangtze River.

RESEARCH EXPERIENCES

Spatio-temporal information query system for ancient Chinese academies (Aug 2023 - Oct 2023)

- Extracted and organized POI data of Chinese academies in Hunan Province from the Tang Dynasty to the Qin Dynasty from ancient texts, and vectorized historical maps.
- Established an academy database using Postgresql, including of data cleaning, standardization, and formatting for future analysis and queries.
- Developed the frontend of the system using React principles, utilizing ArcGIS for JavaScript and Cesium to visualize the data, perform buffer zone queries, identify hotspots, and conduct data statistical analysis.
- Completed a 17-page analysis report, including analysis on the impact of river topography on the distribution of academies and the historical evolution of academy quantities.

Web-based taxi trajectory visualization and hot spot analysis (Jun 2023 - Jul 2023)

- Utilized Python to clean and process nearly 800,000 trajectory data records from more than sixty taxis, visualized the data, performed trajectory filtering and compression, and conducted map matching.
- Developed python algorithm to calculate Dynamic Time Warping (DTW) distances between trajectories and conducted hierarchical clustering.
- Employed Density-Based Spatial Clustering of Applications with Noise (*DBSCAN)* clustering based on boarding and alighting points, identified hotspot areas, and constructed an interactive hotspot network for analysis, revealing 13 distinct hotspot network communities.
- Conducted anomaly detection and analysis on selected trajectories.

Interactive news map construction based on GDELT database (Feb 2023 - Jun 2023)

- Preprocessed data in QGIS and standardized all data into GeoJSON format.
- Developed a news website using a three-month dataset of news records from *GDELT* news database, incorporating front-end design using *ECHARTS*, *CESIUM*, and *heatmap.js*, and back-end implementation with *Axios* and *MySQL*.
- Gained proficiency in using *OpenLayers* and implemented features including registration/login, news forum, news visualization, data analysis, and national relationship analysis.

Workshop: Web-based forest fire assessment and emergency response system (Dec 2022 - Jan 2023)

- Learned network GIS development methods using the Amap API, as well as third-party development tools like Echart and Layui.
- Designed and developed a small-scale WebGIS with the theme of "Smart Forest Fire Information and Emergency," including system login, resource management, forest fire simulation prediction, and emergency decision support.
- Authored 41-page project design documents detailing the system's design background, development significance, feature descriptions, and technical processes.
- Conducted project presentations and reports to showcase project achievements and outcomes.

Aerial imagery based topographic data creation - Hammer survey area (Sep 2022 - Jan 2023)

- Utilized digital photogrammetric systems (VirtuoZo platform, DPGrid platform, and tilt 3D mapping platform) to create digital elevation models, orthophotos, and digital line maps.
- Gained practical experience in operating and understanding the basic functions of photogrammetric systems, and methods of relative orientation, absolute orientation, and aerial triangulation.

- Contributed to the production of DEMs, DOMs, and DLGs.

Visualization workshop: Spatial distribution of housing prices in New York City (Nov 2022 - Dec 2022)

- Preprocessed housing price data of New York in 2019 obtained from OpenStreetMap using ArcGIS.
- Conducted conceptual design, logical design, and index design for spatial databases.
- Conducted point pattern analysis, statistical analysis, spatiotemporal change analysis, hotspot analysis, clustering and outlier analysis, as well as buffer analysis. in QGIS.
- Created five reports and thirteen thematic maps.

Methods for the Fusion of Video Information into Large-Scale 3D Models（Feb 2022 - May 2022）

Supervisor：Qingxiang Meng

- Set up 5 cameras and 30 control points to gather data in the research environment.
- Engaged in team collaboration and actively learn photogrammetric knowledge during group meetings.

Digital mapping and GNSS measurement（Jun 2021 - Aug 2021）

Survey Area:Aiman Wenlv Town, Yingcheng, Xiaogan, Hubei

- Utilized Electronic Distance Measuring Device, GNSS receivers, and drones for fragment measurements, topographic mapping, and aerial image acquisition.
- Conducted in-office cartography and image processing using software like iData and PhotoScan.
- Produced maps and a 22-page report based on the collected data.

Satellite Imagery Processing and Index Extraction（Apr 2021 - Jun 2021）

- Utilized ERDAS IMAGINE for band stacking, geometric correction, and image mosaicking.
- Conducted image classification using both unsupervised and supervised methods, achieving a classification accuracy exceeding 90%.
- Employed OpenCV to extract indices for various land cover types such as vegetation, water bodies, and built-up areas and conducted shadow extraction.

HONORS AND AWARDS

2021 Outstanding Student, Wuhan University
2021 Scholarship (Category C, ￥1000), Wuhan University

SKILLS

- Programming Languages: C++, Python, Java
- Image Analysis Tools: ENVI, ERDAS IMAGINE
- GIS Tools: ArcGIS, QGIS

- Front-End Web Development Tools: HTML, CSS, JavaScript, React, Leaflet, Cesium, Echarts, ArcGIS for JavaScript
- Statistics: NumPy, pandas
- Language Skills: English (IELTS: 7.5) and Mandarin Chinese (native)