BOWEN LIAO

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EDUCATION

College of Geoexploration Science and Technology, **Jilin University** 09/2020-06/2024
- **Bachelor of Science** in **Geographic Information Science** Expected in 06/2024
- **GPA:** 3.55/4.00 (87.57/100)
- **Core Courses:** *Calculus B, Linear Algebra B, Mathematical Experiments, Probability and Statistics B, 3D Modeling Design, Matlab Programming, Principle and Application of Database, Petrology B, Structural Geology B, Geomorphology and Quaternary Geology, Data Structure B, New Technology and Application of Remote Sensing, Digital Image Processing of Remote Sensing, Photogrammetry, Geo-information System Software Engineering*

RESEARCH EXPERIENCES

Research Assistant, **Exploration of Deep Learning-Based Remote Sensing Image Segmentation, Chinese Academy of Sciences**
06/2023-09/2023
- Followed the multi-level feature fusion approach, adopted the fusion of global and local features to improve the model based on GLnet
- Introduced a self-attention mechanism and enhanced both global and local branches to reduce the times of feature fusions, improving fusion speed, and achieving better feature fusion results.
- Used a smaller patch size (504 x 504) in ablation experiments resulting in higher accuracy
- Completed a thesis titled on *Semantic Segmentation of Ultra-High Resolution Remote Sensing Image via Transformer-Based Feature Enhancement*

Researcher, **Exploration of Big Data and Machine Learning Applications in Natural Disaster Research** *(South-eastern Tibetan Plateau)* 06/2022-04/2023
- Classified multiple types of landslides using visual interpretation
- Pre-processed remote sensing data by using multiple tools in ENVI and ArcMap
- Employed GEE to calculate the susceptibility of landslides using machine learning methods, such as Random Forest(RF) and support vector machine(SVM)
- Coded data processing program in Pycharm
- Adopted multiple deep learning methods such as BP neural network, CNN, to extract deep precipitating factors of landslide
- Completed a thesis titled on *Long-term landslides detection and susceptibility mapping with multi-source optical remote sensing in the eastern Himalayan syntaxis*

Researcher, **Study on the Landscape Pattern Variation of Xianghai Wetland in the Last 40 Years** 04/2022-07/2023
- Used RS and GIS techniques to investigate the landscapes pattern variation of wetland
- Pre-processed remote sensing data using multiple tools in ENVI and ArcMap
- Used visual interpretation to classify various ground features
- Verified the results of visual interpretation using ENVI
- Calculated multiple indices such as landscape index, and centroid mobility of wetland and analyzed the variation
- Completed a thesis titled on *LANDSCAPE PATTERN CHANGES IN XIANGHAI WETLAND IN RECENT 40 YEARS*

Researcher, **Research on the Ecological Corridor of the Waterfowls in Northeast China** 04/2022-07/2022
- Created influential factor tables based on analysis of different waterfowls' living preferences
- Established resistance surface by calculating resistance factors using multiple tools in ArcMap

INTERNSHIP

Data Processing Engineer **at Beijing Tsinghua Tongheng Planning & Design Institute** 09/2023
- Utilized tools like Python for data scraping and cleaning
- Conducted data visualization analysis using tools such as Excel, d3.js, and Tableau
- Implemented front-end display of geographic encoding functionality using map APIs and the Vue framework for front-end and back-end data interaction

Intern **in the project of Digital Twin City at the National Academy of Development and Strategy, RUC** 05/2023
- Created urban building models using tools including ArcGIS Pro, Revit, and 3D Max and conducted format conversion, georeferencing, attribute field addition, attribute value input, and layer service publishing

- Investigated the scope and types of activities in currently turbulent regions worldwide, annotated them on maps, and designed different fields to achieve corresponding visual display effects as actual requirements
- Conducted research on remote sensing identification of urban villages, utilized multi-source data, various feature extraction and computation methods, and employed techniques like random forests and convolutional neural networks for identification

ACADEMIC COURSEWORK

Basic Teaching Practice of Geographic Information Systems, **Jilin University**   07/2022-08/2022
- Collected field geological information and optimized the E-data to create the geodatabase
- Measured, sorted, and organized the geo-spectral data to establish the spectral database
- Performed visual interpretation of remote sensing images and created the vectorized maps

*The Application of Geographic Information Systems***, Jilin University**   08/2021-09/2021
- Measured, collected, and analyzed the spectral data of objects
- Interpreted visually remote sensing images and created vectorized maps.
- Participated in programming to realize map display, positioning, markers addition, and other functions
- Calculated flow direction and flow accumulation based on DEM using multiple tools in ArcMap
- Extracted streams to further analyze basins characteristics
- Simulated the process of floods' development in 3D form by using ArcScene

The System Development for Supplier Management, *Object Orientated Program***, Jilin University**   03/2022-05/2022
- Used C# programming language to create a multi-function system based on the linked list data structure
- Employed multi-level menu to integrate various functions based on multi-window frame
- Visualized the data records in real time according to the latest modifications

Optimization of Course Selection System, *Data Structure B***, Jilin University**   10/2021-12/2021
- Programmed by C# language and realized multi-function system using the linked list data structure
- Used different conditions to search for specific courses
- Realized separate user and administrator systems

Development of Mobile GIS, *Principle and Application of Database***, Jilin University**   05/2022-06/2022
- Employed full-stack development mode by combining front-end and back-end development
- Programmed by Java, HTML, CSS, and JS language and realized multi-function system using popular frameworks, such as Springboot, and MyBatis.
- Designed Android mobile user interface with multi-menu by arranging various layouts
- Realized instant messaging (IM) using the socket communication model

HONOR & AWARDS

Won the **Silver Award** in "Internet+" **College Students Innovation and Entrepreneurship Competition**   04/2022-07/2022
- Designed a comprehensive service platform for the production, processing, and sales of Tongyu special agricultural products based on the technologies of WebGIS, 3S, and the internet of things

Won the **Bronze Prize** in the "Challenge Cup" **College Student Business Plan Competition**   05/2022
- Collated data with Microsoft Office, wrote the business plan and finished the report of PPT

Won the **2nd Prize** in the "National Talents Cup" **Reading Competition** of Foreign Language Teaching & Research Press 09/2021

Won the **Excellence Award** in **National University GIS Skills Competition** (Advanced Development Group)   06/2021-11/2021
- Developed the WebGIS, demonstrated the vector maps, remote sensing images, as well as POI addition

Won the **Special Award** in the **National English Competition for College Students** of Jilin Province   05/2021

Won the **Honorable Mention** in **Mathematical Contest in Modeling**   02/2021
- Built the mathematical model using Matlab and formatted paper with Latex

EXTRACURRICULAR ACTIVITIES

Volunteer, **Beautiful China, Everything I Never Told You**   11/2021-01/2022
- Made pen friends with the pupils of a village school

Debater, **Freshman Cup Debate Competition**   10/2020-11/2020
- Participated as the first debater to illustrate the overall standpoints

SKILLS

Skilled in ArcGIS, ENVI, Matlab, and Microsoft Office; Proficient in C#, CSS+HTML+JS, Java, Python