Zhuoning Gu

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RESEARCH INTERESTS

- **Remote sensing, agricultural applications, data fusion**

EDUCATION

M.S. **Faculty of Geographical Sciences, Beijing Normal University (BNU)** 2021 - present
Major in Cartography and Geography Information System Beijing, China
GPA: 3.8/4.0 Supervisor: Professor Chen Jin [Lab Website] [Google Scholar]

B.S. **School of Geography and Planning, Sun Yat-Sen University (SYSU)** 2017 - 2021
Major in Geographic Information Science Guangzhou, China
GPA: 4.0/4.0 Rank: 1/61

PUBLICATION

- **Gu, Z.**, Chen, J., Chen, Y., Qiu, Y., Zhu, X., & Chen. X. "Agri-Fuse: A novel spatiotemporal fusion method designed for agricultural scenarios with diverse phenological changes". *Remote Sensing of Environment*, accepted. (**First Author**; **SCI**, **IF=13.5**)

RESEARCH EXPERIENCE

Agri-Fuse: A Novel Spatiotemporal Fusion Method Designed for Agricultural Scenarios with Diverse Phenological Changes 2022 - present

- Led the development of an innovative algorithm, Agri-Fuse, to synthesize remote sensing imagery with high spatial and temporal resolution, and particularly to better handle phenological changes in agricultural regions.
- Outperformed three benchmarks and one state-of-the-art algorithm, and improved the overall accuracy of crop classification from 88% to 92%, demonstrating its significant potential in agricultural applications. Drafted the manuscript which was accepted by the "*Remote Sensing of Environment*" journal.

A Crop Classification Framework with Data Reconstruction and Feature Representation Using Sentinel-2 and Sentinel-1 Time Series 2022 - 2023

- Designed and implemented a Recurrent Neural Network to reconstruct gap-free Sentinel-2 optical time series with ancillary Sentinel-1 SAR data. Adapted and programmed a Two-dimensional Principal Component Analysis to extract representative features for better crop classification.
- Achieved an outstanding 90% overall accuracy in mapping major crops in both northern and southern China using the quality-refined data with a random forest classifier, ranking 2/600 teams in a national mapping contest.

Causes of the Dissimilarities between Remotely Sensed Images with Different Resolutions Based on a Three-dimensional Radiative Transfer Model 2020 - 2021

- Applied a three-dimensional radiative transfer model, LESS, and designed a series of experiments to quantitatively reveal the impact of sensor spatial response functions, spectral response functions, and view angles on the dissimilarities between remotely sensed images.
- Learned quantitative remote sensing and gained experience in literature review and management. Completed a manuscript that won the Outstanding Undergraduate Thesis in SYSU (top 1%).

ACADEMIC ACTIVITIES

Conference Presentation: The 30th International Conference on Geoinformatics, London, UK. 2023

- Published a conference abstract and presented in poster.

Teaching Assistant: Introduction to Remote Sensing (3 credits), BNU. 2023

- Managed labs and experiments, including image preprocessing with ENVI and field spectroscopy sampling. Engaged in post-course Q&A and assignment evaluations.

OTHER PROFESSIONAL EXPERIENCE

National Rice Irrigation System Type Mapping Using Fine-Resolution Imagery and Deep Learning Modeling, University of California, Berkeley. *Team Member* 2023

- Validated algorithm accuracy using Google Earth Engine, and co-authored an ongoing paper.

National Crop Planting Survey, BNU. *Team Leader* 2022 - 2023

- Conducted field research on crop planting, identification, and GPS sampling in multiple Chinese provinces.

SKILLS

- **Programming Languages**: Python (Advanced), Matlab (Advanced), IDL (Intermediate)
- **Professional software**: Google Earth Engine, ENVI, ArcGIS, SNAP, LESS, SPSS, EndNote
- **Languages**: Fluent in Mandarin (Native) and English (TOFEL: 104)

AWARDS

- Second-class scholarship (Top 5% granted by BNU) 2023, 2022
- National Second Prize in the "MAP-Cup" Agriculture Competition (2/600 teams) 2021, 2022
- Second Prize in Graduate Academic Competition (Faculty of Geographical Science, BNU) 2022
- Outstanding Undergraduate Thesis (top 1% granted by SYSU) 2021
- Top Ten Outstanding Graduates (top 1% granted by SYSU) 2021
- First-class scholarship (top 1% granted by SYSU) 2019, 2020
- National Scholarship (top 1% granted by the Ministry of Education of China) 2018