Tang Sui

Phone: +1 (608)867-4447 **Email:** tsui5@wisc.edu
Address: 1721 Norman Way, Madison, WI, USA

Education

University of Wisconsin–Madison 08/2024 – Present
M.S./Ph.D. Student in Geography (Remote Sensing & Geospatial Data Science)
GPA: 4.0/4.0
Expected M.S.: 06/2025 Expected Ph.D.: 05/2029

Tongji University, Shanghai, China 09/2019 – 07/2024
Bachelor of Engineering in Surveying and Mapping
GPA: 4.41/5.0

Publications

1. **Tang Sui**, Mingda Wu, Meiliu Wu, Zhou Zhang, Qunying Huang, 2024. "BiAU-Net: Wildfire burnt area mapping using bi-temporal Sentinel-2 imagery and U-Net with attention mechanism." *International Journal of Applied Earth Observation and Geoinformation.*
2. Songxi Yang, Bo Peng, **Tang Sui**, Meiliu Wu, Qunying Huang, 2025. "Advancing Self-Supervised Learning for Building Change Detection and Damage Assessment: Unified Denoising Autoencoder and Contrastive Learning Framework." *Remote Sensing*, 17(15): 2717.
3. Mingda Wu, **Tang Sui**, Bo Peng, Manzhu Yu, Qunying Huang, 2024. "A Remote Sensing Spectral Index Guided Bitemporal Residual Attention Network for Wildfire Burn Severity Mapping." *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing.*
4. Songxi Yang, Bo Peng, **Tang Sui**, Qunying Huang, 2024. "Self-supervised Pretraining with Edge Guidance for Building Damage Assessment." *Proceedings of the 7th ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery.*

Conference and Invited Talks

1. **Tang Sui**, Songxi Yang, Qunying Huang, 2025. "SpecSwin: A Hyperspectral Data Simulation Framework for Scalable Geospatial Modeling" *8th ACM SIGSPATIAL International Workshop on GeoSpatial Simulation (GeoSim 2025)*, Minneapolis, MN, Nov 3–6, 2025.
2. **Tang Sui**, Qunying Huang, 2025. "Quasi-Hyperspectral Image: Constructing Hyperspectral Imagery from Multispectral Data Using Convolutional Neural Networks" *2025 Association of American Geographers (AAG) Annual Meeting*, Detroit, MI, Mar 24-28, 2025.
3. **Tang Sui**, Mingda Wu, Meiliu Wu, Qunying Huang, 2023. "Empowering Urban Wildfire Burnt Area Detection with Deep Learning." *Global Smart Cities Summit cum The 3rd International Conference on Urban Informatics (GSCS & ICUI 2023)* Conference, Hong Kong, Aug 20-23, 2023. (Invited)
4. Qunying Huang, **Tang Sui**, Meiliu Wu, 2023. "Empowering Urban Wildfire Burnt Area Detection with U-Net and Sentinel-2 Imagery." *Spatial Data Science Symposium*, Online, Sep 5-6, 2023. (Invited)
5. Qunying Huang, Mingda Wu, **Tang Sui**, 2023. "Empowering Wildfire Damage Assessment with Bi-temporal Sentinel-2 Data and Deep Learning." *2023 American Geophysical Union (AGU) Fall Meeting*, San Francisco, CA, Dec 11-15, 2023. (Invited)
6. Mingda Wu, **Tang Sui**, Meiliu Wu, Qunying Huang, 2023. "Pixel-wise Wildfire Burn Severity Classification with Bi-temporal Sentinel-2 Data and Deep Learning." The 6th International Conference on Big Data Technologies (*ICBDT 2023*) Conference, Sep 22-24, 2023, Qingdao, China, pg.360-364.
7. **Tang Sui**, 2022. "Pedestrian Crossing Light Assistance System." 4th International Conference on Electronic Engineering and Informatics (*EEI 2022*), June 24-26, 2022, Guiyang, China, pg.1-5.

Teaching and Mentoring Experience

Teaching Assistant 08/2025 – 12/2025

GEOG 578: GIS Applications, University of Wisconsin–Madison

- Instructed weekly lab sessions (hands-on GIS software training) for undergraduate and graduate students
- Provided individual guidance and office hour support to 20 students
- Assisted in designing lab assignments and evaluating coursework

Teaching Assistant 01/2025 – 06/2025

GEOG170: Our Digital Globe: An Overview of GIScience and its Technology, University of Wisconsin-Madison

- Assisted in lecture preparation, homework grading, and student guidance

Mentor 10/2024 – Present

- Mentoring Ming Wang and Fangchao Qi on the project "Filling Missing Streamflow Data with Graph Neural Network"
- Provide guidance on data processing, model selection, and methodological design

Research Experiences

Wildfire Burnt Area Detection with Deep Learning 07/2022 – Present

Spatial Computing and Data Mining Lab, UW-Madison University

Advisor: Prof. Qunying Huang, UW-Madison University

- Objective: Detecting and mapping the extent of wildfire burnt area using deep learning
- Identified suitable wildfire events, collected datasets for wildfire detection, used Envi for false color band combinations to solve the difficulty of feature extraction, and designed data augmentation methods
- Developed a bi-temporal input model based on U-Net architecture that takes post-fire and pre-fire images as input; designed a custom loss function combination to train the network
- Compared to ESA's public available product (Fire_cci), achieved improvements of more than 10% in overall accuracy, 29% in precision, 19% in F1-score, and 29% in Kappa coefficient

Non-visible Coordinate Measurement System 08/2022 – 12/2022

Advisor: Prof. Haojun Li, Tongji University

- Objective: Developing a high-accuracy measurement system for non-visible conditions using a 4G transportation model
- Designed the framework of a non-visible high-accuracy coordinate measurement system
- Proposed a solution model for coordinate measurement with an auxiliary wire and derived its calculation algorithm; considered various on-site measurement complexities
- Estimated measurement errors by combining meteorological factors, horizontal angle errors, zenith distance errors and the influence of curvature and refraction

Summer Practice 05/2022 – 07/2022

Advisor: Prof. Anrong Dang, Tsinghua University

- Involved in projects like Urban Planning Operators Development, Analysis for Historical and Cultural Cities and Towns
- Learned industry standards, improved software development skills, and gained deeper understanding of spatial databases

Image Processing Pedestrian Recognition Device 12/2021 – 03/2022

Advisor: Prof. Munib Wober, Massachusetts Institute of Technology

- Objective: Designing an easy-to-assemble, energy-efficient follower lighting installation
- Contributed to software design and hardware selection (energy units, sensing units, lighting units, image processing modules)
- Used the Simple-blob operator to design an algorithm for pedestrian detection and location

Internship

Institute of Agricultural Recourses and Regional Planning, Chinese Academy of Agricultural Sciences 07/2021 – 08/2021

Intern of Smart Agriculture Research Office, Beijing, China

- Collated wheat, rice, citrus and oilseed rape cultivation and the local growing cycles of the crops in 11 cities of Hubei Province
- Classified NDVI curves for the 2020 Sentinel image of Xinmin, Liaoning; visually inspected and labeled water bodies, buildings, and other features
- Used Google Earth Engine to analyze and process Sentinel images

College of Surveying and Geo-informatics, Tongji University 08/2021 – 09/2021 & 07/2022 – 08/2022

School Practice

- **GNSS Surveying Internship:** Used RTK and total station to survey 3D coordinates of lightning rods on the Oriental Pearl Tower and two adjacent buildings
- **GIS Internship:** Built a 3D map of the school using C# and ArcGIS Engine; implemented functionalities such as overview map, route planning, and building information dissemination
- **Engineering Surveying Internship:** Analyzed correlation between temperature and track length variation at Guoquan Road Station (Shanghai Metro Line 10) using SPSS and Matlab; developed a temperature correction model

Honors and Awards

- Fourth Place, 2025 Association of American Geographers (AAG) Annual Meeting, Remote Sensing Special Group Competition (03/2025)
- First Prize, 2022 National College Students Surveying and Mapping Discipline Innovation and Entrepreneurship Intelligent Competition - UAV Photogrammetry Virtual Simulation Competition (08/2022)
- First Prize, Tongji University Merit Scholarship (12/2023)
- Second Prize, Tongji University Merit Scholarship (12/2021)
- Second Prize, 12th National College Students Surveying and Mapping Science and Technology Competition (Southern Surveying Cup) - Surveying and Mapping Essay Competition (07/2021)
- Third Prize, Tongji University Merit Scholarship (12/2022)
- Third Prize, Tongji University Excellence Cup (12/2022)
- Third Prize, Tongji University Innovation Competition (12/2020)