MD TOUSIF TANZIR
Doctoral Instructional Assistant
Department of Geography and Environmental
Studies, ELA 351
Texas State University, San Marcos, Texas
Email: szw10@txstate.edu

Education

PhD in Geographic Information Science (Starting semester: Fall 2022)
Texas State University
Cumulative GPA: 3.81/4.00

- Completed all the required courses.
- Passed in the Doctoral Comprehensive Examination (Fall 2024) and Dissertation Proposal Defense (Fall 2025)
- **Relevant Ph.D. Coursework:** Technical Foundations and Methods in GIScience, Quantitative Methods, Research Design, Nature and Philosophy in Geography, Application of Remote Sensing, GIS and Environmental Geography, Advanced GIS, Advanced Seminar in Environmental Geography, Teaching Geography, Advanced Techniques in GIScience (Python-based), Geovisualization, Geocomputation,

Master of Science in Agroforestry and Environment (2018-2021)
Gazipur Agricultural University (GAU), Gazipur-1706, Bangladesh

B. Sc. in Agriculture (2014-2017)
Noakhali Science and Technology University, Noakhali-3814, Bangladesh

Published Research Papers

2020 Rahman, A., Abdullah, H. M., **Tanzir, M. T.**, Hossain, M. J., Khan, B. M., Miah, M. G., & Islam, I. (2020). Performance of different machine learning algorithms on satellite image classification in rural and urban setup. Remote Sensing Applications: Society and Environment, 100410. https://doi.org/10.1016/j.rsase.2020.100410. **Citation: 96**

2024 Chow, T. E., Sanchez, D. P., Amatya, P., & **Tanzir, M. T.** (2024). Modelling the suitability of multiple launch rocket system in the war in Ukraine. Applied Geography, 164, 103206. https://doi.org/10.1016/j.apgeog.2024.103206. **Citation: 3**

2024 **Tanzir, Md Tousif**, Shakibul Islam, KH, Islam, Md. Raihanul, Abdullah, Hasan M., and Tuhin, Abdul Kaium (2024) "Vulnerability Assessment of Urban and Peri-Urban Areas in Dhaka: Exploring Ecosystem Service Loss," *Cities and the Environment (CATE)*: Vol. 17: Iss. 1, Article 1. DOI: 10.15365/cate.2024.170101. **Citation: 5**

2024 Abdullah, H. M., Mukti, M., Miah, M. G., Karim, M. A., **Tanzir, M. T.,** & Hossain, M. S. (2024). Development at the cost of unsustainable degradation of wetlands: Unraveling the dynamics (historic and future) of wetlands in the megacity Dhaka. *World Development Sustainability*, *4*, 100131. https://doi.org/10.1016/j.wds.2024.100131 **Citation: 11**

Technical Skills

- **Programming & Scripting**: Python (NumPy, pandas, scikit-learn, TensorFlow, PyTorch, OpenCV), R
- **Geospatial Analysis**: ArcGIS Pro, QGIS, Google Earth Engine (GEE), PostGIS, GDAL

- **Remote Sensing Expertise**: Landsat, Sentinel, PlanetScope; time-series analysis for vegetation, thermal, and hydrological indices
- **AI & Machine Learning for Earth Observation**: Proficiency in applying deep learning and traditional ML techniques to diverse Earth observation tasks. Skilled in supervised and unsupervised learning, image classification, spatiotemporal prediction, feature extraction, object detection, street image matching, and graph-based learning.
- **Statistical & Trend Analysis**: R, SPSS, Excel, Mann-Kendall trend test, Pearson correlation, regression modeling
- **Cloud & Collaborative Platforms**: Google Colab, GitHub, Jupyter Notebooks
- **Scientific Visualization & Dashboarding**: Matplotlib, Seaborn, Tableau, Geopandas

Accepted Research Works at Conferences

Conference Name	Accepted Research
PANGEA 2024	Vulnerability Assessment of Urban and Peri-Urban Areas in Dhaka: Exploring Ecosystem Service Loss
AAG 2024	Image Matching Using GeoAI for Flood Monitoring
SWAAG-AGX 2024	Assessing Drought Risk in Central Texas Using an Integrated AHP-GIS Framework with AI and Human Expert Insight
AAG 2025	Assessing Drought Risk in Central Texas Using an Integrated AHP-GIS Framework with AI and Human Expert Insight
AAG 2026	A Spatiotemporal Assessment of Urban Greenery Using the Panoramic and Human Visual Perspectives

Research Experience

Lab Manager (December 2018- June 2019)
GIS and Remote Sensing Lab, GAU
Graduate Research Assistant (2019-2021)
GIS and Remote Sensing Lab, GAU
Doctoral Research Assistant (Spring 2023)
Supervisor: Dr. Su Y. Han
Project: Adaptive Choropleth Mapper with Multiple Line Chart (MLC) and Comparison Line Chart (CLC)
Doctoral Research Assistant (Fall 2024)
Supervisor: Dr. Kimberly Meitzen
Research work: Development of Geodatabase for the San Marcos River Basin

Ongoing Research Projects

Research Project: Geo-localization of Crowdsourced Images Using GeoAI for Flood Monitoring **Role:**
1. Pixel-level semantic segmentation of urban street images using DeepLabV3+ with a ResNet-101 backbone, trained on the Cityscapes dataset to generate segmentation masks for Google Street View (GSV) and Twitter (X) images.
2. Developing scene graph for each street image based on global and local context and performing graph matching between GSV and X images using Graph Edit Distance (GED).
Supervisor: Dr. Edwin Chow
Funded by: **Research Enhancement Program (REP)**, Texas State University

Research Project: Sustainability Challenges of Agave Sector in Oaxaca, Mexico

Role: Monitoring and analyzing time-series changes in land use land cover (LULC) of Agave cultivation areas in Oaxaca, Mexico, utilizing Planet imagery.
Supervisor: Dr. Nathan Currit
As part of the Doctoral Instructional Assistantship

Teaching Experience

Doctoral Teaching Assistant (FALL 2022 – SPRING 2023)
Course Name: Fundamentals of GIS (GEO 2426) (Lab Section)
Doctoral Teaching Assistant (SUMMER 2023 – SPRING 2024)
Course Name: Physical Geology (GEOL 1410) (Lab Section)
Doctoral Teaching Assistant (Fall 2024)
Course Name: Fundamentals of GIS (GEO 2426) (Online Lab Section)
Doctoral Teaching Assistant (Spring 2025)
Course Name: Advanced GIS (GEO 3426)
Doctoral Teaching Assistant (Summer 2025)
Course Name: (GEOL 1410) (Lab Section)
Instructor of Record (Spring 2026)
Course Name: Fundamentals of GIS (GEO 2426)

Volunteer Roles

Position: Vice President (Fall 2025-Spring 2026)
Organization: Society of Geographic Information Science (SOGIS), Department of Geography and Environmental Studies, Texas State University
Key Responsibilities:

- To serve in absence of the President
- To assist the president
- To manage any standing committees or form special committees
- To perform any other duties as required by the body
- To assist all other executive board members with tasks as needed

Position: Community Organizer (Fall 2024-Spring 2025)
Organization: Grad Forum, Department of Geography and Environmental Studies, Texas State University
Key Responsibilities:

- Communication with different groups of graduate students and organizing events.
- Collaboration with the Co-Presidents and other officers to communicate and help build a collegial and supportive environment within the group.

Position: Web Master (Fall 2024-Spring 2025)
Organization: Society of Geographic Information Science (SOGIS), Department of Geography and Environmental Studies, Texas State University
Key Responsibilities:

- Share event information on SOGIS's social media platforms.
- Maintain and update SOGIS's social media presence.
- Develop and manage the SOGIS website.

Position: Vice President (Summer 2025- Spring 2026)
Organization: Society of Geographic Information Science (SOGIS), Department of Geography and Environmental Studies, Texas State University
Key Responsibilities:

- To serve in absence of the President
- To assist the president

- Managing any standing committee or forming special committees
- To perform any other duties as required by the body
- To assist all other executive board members with tasks as needed

Awards and Scholarships

- Graduate Research Assistantship, GIS and Remote Sensing Lab, GAU
- BSMRAU merit scholarship (2 times)
- Merrick Merit Fellowship, Texas State University (2022)
- Joe and Jerry Moore Scholarship, Texas State University (2024)
- Graduate College Scholarship, Texas State University (2024)
- Doctoral Retention Scholarship, Texas State University (2024)
- Bernard W. Detlefsen Doctoral Excellence Scholarship, Texas State University (2024)
- Bernard W. Detlefsen Doctoral Candidate Scholarship, Texas State University (2025)

References

Dr. Tzee-kiu Edwin Chow
Professor
PhD Supervisor
Department of Geography and Environmental Studies
Texas State University
Email: chow@txstate.edu

Dr. Nathan Allen Currit
Associate Professor
PhD Dissertation Committee Member
Department of Geography and Environmental Studies
Texas State University
Email: currit@txstate.edu

Dr. Hasan Muhammad Abdullah
Associate Professor
MS Supervisor
Department of Agroforestry and Environment
Gazipur Agricultural University, Gazipur, Bangladesh
Email: hasan.abdullah@bsmrau.edu.bd