Mst Sanjida Alam

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Education

Doctor of Philosophy (PhD) in Community Health Sciences & Policy (Environmental Health) ***August 2026***
Graduate Research Assistant
Louisiana State University Health Sciences Center New Orleans, LA 70112, USA

Research Project: Exposing Hidden Heat: Mapping heat-driven health disparities and policy solutions in Dhaka, Bangladesh.

Current Work: Under this project, I am currently assessing and mapping heat vulnerability in the Dhaka Metropolitan Area using machine learning and geospatial approaches. The study integrates environmental, demographic, health, and socioeconomic indicators to identify spatial disparities, vulnerable populations, and priority areas for climate-resilient urban planning and public health interventions.

Master of Science in Geographic Information Science (GIS) ***August 2024 – May 2026***
Clark University, Worcester, MA, USA
CGPA: 3.89
Awarded Merit-Based Scholarship
Thesis: Machine Learning–Based Assessment of Insect Outbreak Impacts on Fuel Treatments and Wildfire Risk: Implications for Community Resilience

Master of Science in Geography and Environmental Studies ***January 2010 – February 2012***
University of Chittagong, Chattogram, Bangladesh
GPA: 3.73 (4th Rank)
Thesis: Vulnerability assessment of women and children associated with cyclonic hazards in the coastal belt of Bangladesh: A case study on Anwara Upazila, Chittagong, Bangladesh

Bachelor of Science in Geography and Environmental Studies ***January 2005 – February 2010***
University of Chittagong, Chattogram, Bangladesh
CGPA: 3.64

Research Experience

Publications

1. **Alam, M. S., (2026).** Geospatial analysis of urban heat Islands and heat vulnerability in Chattogram, Bangladesh: implications for public health risks. *Air Qual Atmos Health 19*, 22. https://doi.org/10.1007/s11869-026-01920-x

   - This study combines biophysical and socio-demographic data to map the intensity of Urban Heat Island and Heat Vulnerability Index. The findings revealed the areas in city center of Chattogram are mostly vulnerable to heat events and heat-related health problems. These results highlight the need to incorporate vulnerability assessment into urban planning to inform climate adaptation and reduce possible public health effects in fast-growing cities.

2. **Alam, M. S., (2026).** Modeling and Performance Evaluation of Machine Learning for Historical and Future Land Use and Land Cover Dynamics in Chattogram District, Bangladesh. *Frontiers in Environmental Science*, *14*, 1923661. https://doi.org/10.3389/fenvs.2026.1923661

- This study uses Landsat imagery, Random Forest classification, RF–SVM modelling, and Markov Chain simulation to assess LULC change in Chattogram District. Findings project built-up and cropland expansion by 2035, increasing pressure on vegetation, waterbodies, and bare land.

3. **Alam, M. S.**, Rahman, M., Sharmin, N., Molla, M. N., Al Mahbub, H., Muniruzzaman, M., & Alam, E. (2026). Evaluating Spatiotemporal Changes and Predicting Land-Use Dynamics Using an Artificial Neural Network in Worcester City, Massachusetts. *Earth Systems and Environment*, 1-20. https://doi.org/10.1007/s41748-026-01099-2

   - This study shows continued urban expansion and reduction in forest cover, with strong model performance. Future projections using a Multi-Layer Perceptron Artificial Neural Network (QGIS MOLUSCE) indicate continued urban expansion and gradual forest loss, highlighting the critical need for continuous land-use monitoring to support effective urban planning and policy development.

4. Ahsan, M. S., **Alam, M. S**., Ahmed, S. S., Islam, M. T., Shoaib, H. A., Mridha, M. F., & Hossen, M. J. (2026). Attention-Based Geo–Textual Fusion Network for Disaster Risk Prediction. *IEEE Open Journal of the Computer Society. https://doi.org/10.1109/OJCS.2026.3697754*

   - This study proposes an AI-driven geo-textual fusion framework that integrates disaster-related text with GIS-based hazard attributes, attains high predictive performance, and promotes better evacuation planning. Its findings prove that multimodal fusion remarkably enhances situational awareness and real-time disaster response capabilities.

5. Rahman, M., Mahbub, H. A., **Alam, M. S.,** Alam, J., Sharmin, N., & Molla, M. N. (2026). Assessing future drought scenarios in Rangpur, Bangladesh using CMIP6 climate projections and drought indices. Discover Geoscience, 4, Article 199. https://doi.org/10.1007/s44288-026-00566-7

   - This study applies climate data and drought indices to assess and project the future drought frequency, duration, and severity in Rangpur under different climatic conditions.

6. Mahbub, H. A., **Alam, M. S.,** Muhibbullah, M., Sarwar, M. I., Bakkar, M. A., Hassan, A., & Rahman, M. (2026). Geo-spatial exploration of climate change vulnerability: Impacts on agriculture and livelihoods in Kapasia Upazila of Gazipur District, Bangladesh. In S. Mandal, M. M. A. Dogar, & B. U. Choudhury (Eds.), *Climate change vulnerability* (pp. 43–64). Springer. https://doi.org/10.1007/978-3-032-16783-5_3

   - The study revealed that climate change reduced agricultural yields, biodiversity, water availability, and fish resources; the study recommends sustainable agriculture, tree planting, and biodiversity conservation.

7. **Alam, M. S**., Sharmin, N., Rahman, M., Molla, M. N., & Hossain, M. F. (2025). GIS and Multi Criteria Decision Analysis in Bangladesh: A Systematic Review of Applications. Journal of Geography, *Environment and Earth Science International,* 29(7), 29–48. https://doi.org/10.9734/jgeesi/2025/v29i7916

   - A systematic review exploring the effectiveness and trends of GIS-based Multi-Criteria Decision Analysis (MCDA) in environmental planning and risk assessment of Bangladesh. Results reveal that GIS-MCDA methods have obtained widespread acceptance in various sectors, including disaster management, water resource management, energy, waste management, urban planning, tourism, agriculture, healthcare, and industry.

8. Islam, M. A., Vabna, S. S., Biswas, B., **Alam, M. S.,** & Rahman, M. R. (2026). Health implications of airborne pollutants from inefficient urban waste management systems. *American Journal of Medical Science and Innovation, 5*(1), 29–39. https://doi.org/10.54536/ajmsi.v5i1.5870

   - Examined the health impacts of airborne pollutants generated by inefficient urban waste management, with particular attention to open dumping and waste burning. The study identified elevated particulate matter, heavy

metals, and VOCs associated with increased respiratory and cardiovascular health risks among nearby communities.

9. Rumanuzzaman, K., **Alam, M. S.,** Hossain, A., Mim, S. U. A., & Hasan, M. M. (2025). Machine learning in assessing the impact of climate change on water resources. *Journal of Information Technology, Cybersecurity, and Artificial Intelligence, 2*(2), 34–48. https://doi.org/10.70715/jitcai.2025.v2.i2.015

   - Used machine learning models to assess climate-change impacts on Bangladesh's water resources, including streamflow, groundwater availability, and water quality under future climate scenarios. The study identified LSTM as the strongest streamflow model and projected increasing river flows, declining groundwater, and substantial coastal salinity increases under high-emission conditions.

10. Sarker, P. K., Shoumik, S. C., Palit, S., Chowdhury, A. A. N., **Alam, M. S**., Gazi, M. D. H., & Rahman, M. (2025). Machine learning applications in predicting structural failures and earthquake damage. *International Journal of Research in Civil Engineering and Technology*, 6(1), 36–45. https://doi.org/10.22271/27078264.2025.v6.i1a.79

    - This study examines the efficiency of machine learning algorithms for the prediction of structural failures and damage using various sensors like seismograph, tilt meter etc.

11. Rahman, S. M. S., Hossen, S. M. A., Kabir, N., Opu, R. K., Kamal, S. S., **Alam, M. S**., & Raihan, S. K. (2025). Biodiversity Loss in Coastal Wetlands Due to Industrial Expansion: A Study on Mangrove Ecosystems. *International Journal of Environment and Climate Change,* 15(3), 186–201. https://doi.org/10.9734/ijecc/2025/v15i34765

    - This paper reflects the correlation between industrial expansion and biodiversity in mangrove ecosystems of Bangladesh using geospatial and field data. The result indicates the extent of mangrove deforestation and pollution from industries are declining the diversity of species.

12. **Alam, M. S**. (2021). Evaluation of preparedness of schools in Chittagong City of Bangladesh to face earthquake eventualities. *Punjab Geographer,* Volume 17, pp. 72–86.

    - This study evaluates the disaster preparedness of educational institutions in Chittagong and provides policy recommendations for risk mitigation.

13. Nabi, N., Rahman, M. M., Ghosh, S. K., **Alam, M. S**., Barua, R., Asaduzzaman, M., & Shatu, N. R. (2025). Machine learning-based anomaly detection for cyber threat prevention. *Journal of Primeasia*, 6(1), 1–8. https://doi.org/10.25163/primeasia.6110172

    - The findings highlight the effectiveness and limitations of machine learning within the cybersecurity domain and the necessity of enhancement of ongoing system.

14. Shubho, S. S., **Alam, M. S**., Chakraborty, S., Aziz, M. B., Hasan, S., Hasan, M. S., & Rifaya, A. (2025). Economic empowerment of women for sustainable social development. *International Journal of Social Sciences and Management Review,* 8(1), 209–228. https://doi.org/10.37602/IJSSMR.2025.8115

    - This research indicates economically empowered women have greater control over their finances, decision-making, and labor market. Most challenges are poor access to financial resources, wage system and societal norms which can minimize through effective policy, vocational training programs, and financial support.

Conference Presentations

1. **Alam, M. S**. (2025). Geospatial analysis of urban heat islands and heat vulnerability in Chattogram, Bangladesh: Implications for public health risks. Paper presented at the Association of Pacific Coast Geographers (APCG) 2025, 87th Annual Meeting, Santa Clarita, California, United States. https://apcgweb.org/conferences/

- The study of Urban Heat Island (UHI) and Heat Vulnerability Index (HVI) revealed the areas in city center of Chattogram are mostly vulnerable to heat events and heat-related health problems.

2. Afroz, S., Islam, M. M., Sharma, N., Rawat, K., Saha, T., Das, R., Mim, S. U. A., **Alam, M. S.**, & Ali, M. A. (2025). Predicting heart disease with machine learning: A comparative analysis of multiple models. *2025 5th International Conference on Emerging Research in Electronics, Computer Science and Technology (ICERECT)*. IEEE. https://doi.org/10.1109/ICERECT65215.2025.11379737

   - This paper tests models on a publicly available clinical dataset. The logistic regression model had an accuracy of 85% and a ROC-AUC of 0.90. Study showed the trade-off between performance and interpretability and pointed out important predictors for early risk stratification.

3. **Alam, M. S**. (2026). *Spatiotemporal dynamics and human exposure to wildfires in the USA using an advanced geospatial approach*. Paper presented at the AAG 2026 Annual Meeting (March 17-21), San Francisco, California, United States.
   https://aag-meetings.secure-platform.com/aag2026/solicitations/93/sessiongallery/24787

   - Using ArcGIS Pro with NASA-FIRMS, MTBS, and Census data, it is found that the most burning happens in the summer, with the most activity in July, fire incidents moving westward and southward, and hot spots in central and southeastern part. The most people are exposed in Alaska and the western U.S.

4. **Alam, M. S**., Honnef, T., & Rogan, J. (2025). Mapping the impact of wildfire in the Pacific Palisades, California, through remote sensing and GIS. Poster presented at the American Geophysical Union (AGU) 2025 Fall Meeting, LA, United States.
   https://agu25.ipostersessions.com/Default.aspx?s=0F-FC-BF-8A-4C-79-86-D8-56-37-25-0B-73-1A-C8-B6

   - The overall results reveal that most of the structural damage falling under the category of major destruction and forest area was destroyed adversely. This study urges effective urban planning for the reduction of impact of wildfire and loss of life and resources.

5. **Alam, M. S.** (2025). Analysis and mapping of wildfire severity utilizing advanced GIS techniques in Colorado, USA. Poster presented at the Southeastern Division of the American Association of Geographers (SEDAAG) 2025 Annual Meeting, University of Kentucky, Lexington, Kentucky, United States.

   - The study evaluates wildfire severity mapping throughout Colorado utilizing advanced GIS methods also analyses the emerging hotspots to detect fire prone areas.

6. **Alam, M. S.** (2025). Land Use Change Analysis in Southern Part of Khulna Division, Bangladesh (Using Advanced GIS Software and Remote Sensing), paper presented in 32nd International Cartographic Conference, Vancouver, Canada. https://icc2025.swoogo.com/icc2025/9371889

   - This study indicates rapid forest cover loss (464.10 sq.km), urban expansion, and increase agricultural land are the common trend of this area. Slow reduction of water bodies across the study period is one of the prominent.

7. **Alam, M. S.** (2025, April). Spatiotemporal changes of land use land cover in Worcester City: Focusing on forest cover change detection and associated factors. Paper presented at the Clark University Graduate Research Conference, Worcester, MA, United States.

   - The results indicate that forest covers are decreasing slightly (from 12.4% to 11.9%) and urban areas are expanding slowly, mostly because of development pressure.

8. **Alam, M. S.** (2025). Spatiotemporal analysis of school district dropout rate in Massachusetts, USA. Paper presented at the West Lakes Regional Division Meeting 2025, American Association of Geographers (AAG), Wisconsin, United States.

- The overall results reveal that dropout rates are randomly distributed and high in 2009-10 and its rate was varied as per gender, grade and race.

Abstract Accepted

1. **Alam, M. S.** (2026). Mapping Wildfire Susceptibility and Community Exposure across the United States Using GeoAI. Abstract accepted for presentation at the American Geophysical Union (AGU) Annual Meeting 2026, December 7–11, 2026, San Francisco, California, USA.
2. **Alam, M. S.** (2027). Machine Learning-Assisted Heat Vulnerability Assessment Across Dhaka District, Bangladesh. Abstract accepted for presentation at the American Association of Geographers (AAG) Annual Meeting 2027, February 8–12, 2027, New York City, New York, USA.

Key Note Speaker

1. **Alam, M. S. (2026).** *Geospatial analysis of urban heat islands and heat vulnerability in Chattogram, Bangladesh: Implications for public health risks*. Speaker at the 2nd International Symposium on Public Health and Epidemiology (Public Health 2026), October 12–13, 2026, Singapore.
2. **Alam, M. S. (2026).** *Geospatial analysis of urban heat islands and heat vulnerability in Chattogram, Bangladesh: Implications for public health risks*. Keynote Speaker at the 3rd International Conference on Applied Science and Engineering (Applied Science 2026), October 22–23, 2026, Barcelona, Spain.
3. **Alam, M. S. (2026).** *Geospatial analysis of urban heat islands and heat vulnerability in Chattogram, Bangladesh: Implications for public health risks.* Keynote Speaker at the 4th Global Summit on Climate Changes and Sustainability (GSCCS-2026), October 26–27, 2026, Paris, France.

Manuscripts in Progress

1. **Alam, M. S**., (2027). A Geospatial Analysis of Wildfire Patterns, Prediction, and Human Risk Assessment in the United States. (Accepted as a Book chapter in *Springer Nature*)

   - This study evaluates wildfire spatiotemporal trends, directional distribution, and hot spot detection; future wildfire activity; and human exposures using the data of the USA Census Tracts, MTBS and NASA-FIRMS data from 2000 to 2024 and applying.

2. **Alam, M. S**. et al., (2027). Machine Learning-Based Integrated Flood Risk Assessment with Healthcare Accessibility Analysis in Bangladesh. (*Under review at journal of flood risk management, Wiley*)

   - This study develops a national-scale flood risk assessment framework for Bangladesh by integrating Sentinel-1 SAR flood inventory, XGBoost–CatBoost ensemble machine learning, CMIP6 rainfall sensitivity, district-level Flood Risk Index, and healthcare accessibility analysis. Findings identify high-risk districts and show how flood disruption can reduce hospital accessibility, supporting resilient infrastructure and emergency health planning.

3. Interplay Between Wildfire Behavior, Insect Disturbances, and Fuel Management Strategies in Western U.S. Forests

   - The review highlights how insect outbreaks, forest conditions, climate, and treatment history influence wildfire behavior, burn severity, and the effectiveness of thinning and prescribed fire in enhancing forest resilience.

4. **Alam, M. S**., & Rahman, M. M. (2026). Civil–Military Coordination in Disaster Management: Examining the Role of the Armed Forces in Kurigram, Bangladesh. (*Under review at the journal of Public Organization Review, Springer Nature*)

   - Key findings reveal peoples' strong awareness about armed forces, receiving assistance during disaster and reliability on armed forces over NGOs and other civil organizations. On the other hand, bureaucratic delays, unstructured disaster management framework and insufficient coordination with civil society before disaster occurrence interrupt seamless operation.

Research Project

1. Performance Evaluation of Machine Learning algorithms for land use land cover classification and prediction of Chattogram District, Bangladesh.
   Research Project | Clark University, USA
   Advisor: Associate Professor Florencia Sangermano, Clark University

   - This study assessed the performance of machine learning algorithms for LULC classification and future prediction (for the year 2035) in the Chattogram District, Bangladesh through the Google Earth Engine, Terrset and ArcGIS Pro.

2. Machine Learning Based Flood Risk Mapping for Bangladesh.
   Research Project | Clark University, USA
   Advisor: Associate Professor Hamed Alemohammad, Clark University

   - This project created a flood typology map and categorical flood risk map with five risk levels for Bangladesh, using the Random Forest algorithm. This machine-learning-based approach provides a solid, data-driven assessment of the risk of floods on a national level.

3. Spatio-Temporal Analysis of Wildfire Patterns and Vulnerability Assessment in San Martín, Peru.
   Research Project | Clark University, USA
   Project Members: Mst Sanjida Alam, Bikal Shrestha and Annan Shrestha
   Advisor: Associate Professor Lyndon Estes, Clark University

   - This project explored the spatio-temporal patterns of wildfires and vulnerability across the San Martín region of Peru. Using spatial datasets, long-term fire records, and environmental indicators, the study identified trends in wildfire occurrence and evaluated which communities and ecosystems are most exposed.

4. Mapping the Impact of Wildfire on Structures in the Palisades Fire, California (2025).
   Research Project | The Conservation Biology Institute, USA
   Project Members: Mst Sanjida Alam and Tanner Honnef
   Advisor: Professor John Rogan, Clark University

   - Conducted high-resolution remote sensing analysis to assess structural damage from the 2021 Palisades Fire using pre- and post-fire satellite imagery through ArcGIS Pro and google earth engine.

5. Department of Conservation and Recreation (DCR) Land Change in DCR State Forests of Worcester County, MA, USA (2024).
   Research Project | Department of Conservation and Recreation (DCR), USA
   Advisor: Professor John Rogan, Clark University

   - This project assessed spatial and temporal patterns of land change within DCR-managed forest areas, also suggested geospatial information that can be used for long-term ecosystem monitoring and planning.

6. Spatiotemporal Analysis of Forest Cover Change and Hot Spot Detection in the Quabbin Reservoir Watershed Forest, Massachusetts (2025).
   Research Project | Clark University, USA
   Project Member: Mst Sanjida Alam and Pacific Madabi
   Advisor: Professor Yelena Ogneva-Himmelberger, Clark University

   - This project applied spatial statistics including Emerging Hot Spot Analysis and Spatial Autocorrelation in ArcGIS Pro to identify patterns of forest cover change within the Quabbin Reservoir watershed and found how over time and space forest cover changed.

7. School Districts Dropout Rate Mapping in Massachusetts, USA (2024).
   Research Project | Clark University, USA
   Advisor: Visiting Professor Dr. Yanan Yu, Clark University

- Python scripting was used in ArcGIS Pro to create thematic maps of dropout rates across Massachusetts school districts. The results represent the dropout trends and data-driven decision support for education planning and policy making.

8. Bangladesh–Myanmar Relations: Prospects and Challenges (2017).
   Research Project | Junior Command and Staff Course, School of Infantry and Tactics, Bangladesh Army, Sylhet Cantonment
   Advisors: Lieutenant Colonel Kamal and Major Faysal

   - Depicted the challenges and future scopes of improving the relationship between two countries.

9. Haor Dependency and Disaster Management: A Case Study of Hakaluki Haor (2010).
   Advisor: Professor Iqbal Sarwar, University of Chittagong

   - The project examined the social and ecological dynamics and disaster vulnerabilities in Hakaluki Haor. The study provides long-term strategies for reducing disaster risk.

10. Recent Tsunami Impact on Coastal Areas of Bangladesh: A Study on Local People's Perception (2006).
    Advisor: Professor Dr. Edris Alam and Dr. Marshia Tasnim Akbar

    - This project was developed to enhance the awareness and adaptive capacity of coastal communities regarding frequent disasters.

11. Quality of Living Environment of Cox's Bazar City, Bangladesh (2006).
    Advisor: Professor Dr. Edris Alam and Dr Marshia Tasnim Akbar

    - Key urban environmental challenges in Cox's Bazar were revealed by this research and offered recommendations for sustainable urban planning.

12. Impact of Shrimp Cultivation on Socioeconomic Conditions: A Case Study of Satkhira District (2005).
    Advisor: Professor Kazi Barkat and Prof Iqbal Sarwar, University of Chittagong

    - Overall results showed complex tradeoffs between income generation and environmental degradation in shrimp-dependent communities.

13. Environmental Condition of Satkhira Municipal Town (2005).
    Advisor: Professor Kazi Barkat and Prof. Iqbal Sarwar, University of Chittagong

    - Findings revealed important environmental issues in Satkhira Town, which helped with evidence-based planning and management by the city.

Research Interest

- Public Health and Environmental health
- Geospatial Data Analysis
- GIS and Remote Sensing
- Heat vulnerability
- Disaster Risk
- Climate Change and Health
- Wildfire
- Forest Dynamics
- Geo-AI
- Machine Learning
- LULC and Forest Dynamics

Skills

GIS Skills	ArcGIS Pro, WebMap, QGIS, Geoda, TerrSet

Remote Sensing Skills	Google Earth Engine Code Editor, Google Colab.
Programming Skills	Python, and R Programming.
Other Software Skill	SPSS, NVivo.
Methods	*Machine Learning:* Random Forest, Support Vector Machine, logistic regression, MaxEnt Multi-Layer Perceptron, Mahalanobis and Minimum Distance. *Statistical Methods:* Bivariate Regression, Multivariate Regression, Logistic regression, ANOVA, Principal Components Analysis, Geographically Weighted Regression and Spatial Autocorrelation. *Spatial Analysis:* Geoprocessing, Areal interpolation, Density mapping, mapping and analyzing clusters, measuring data distributions, Geocoding, georeferencing, Space-time analysis, Emerging Hotspot Analysis, Network analytics, Land change modeling, Habitat and biodiversity suitability analysis and Earth trends modeling. *Data collection and Analysis methods:* Online and smartphone app-based survey, GPS tracking, big data, field Survey, Quantitative and Qualitative method.

Awards and Recognition

- APCG "Harry and Shirley Bailey Award, (2025)." for the Outstanding Paper in Physical Geography
- MSGIS Student Travel Award (2025), Graduate School of Geography, Clark University.
- AAG Graduate Student Affinity Group (GSAG), Travel Award (2026).
- Graduate Student Council, Clark University, Research and Support Award (2026).

Professional Experience

1. **Graduate Research Assistant** *August 2026 to Present*
   Louisiana State University Health Sciences Center New Orleans, LA 70112, USA
   - Assesses environmental and climatic factors influencing human health outcomes.
2. **Research Assistant** *August 2025 to January 2026*
   Center for Geospatial Analytics, Clark University, Worcester, MA, USA
   - Contributes to the projects on Land use and land cover change detection analysis and mapping.
3. **Campus Ambassador** *May 2025 to August 2025*
   Clark University, Worcester, MA, USA
   - Promoted academic programs, fostering student engagement, and supporting outreach initiatives.
4. **Advisor, Research & Training (On Leave/Inactive)** *July 2024 to August 2024*
   GREENS, Bangladesh
   - Lead research and training programs on GIS, remote sensing, and climate resilience; help with strategic planning and organizational growth; and support environmentally friendly solutions.
5. **Principal** *November 2022 to August 2024*
   Mymensingh International School *(Major, Bangladesh Army- Education Corps**)***

- Managed academic operations, faculty development, resource allocation, and community relations also ensuring compliance with educational authorities.

6. **Education Officer** *June 2017 to November 2022*
   Artillery Centre & School *(Major, Bangladesh Army- Education Corps)*
   - Developed COVID-19, tidal effect, and operational maps using ArcGIS Pro, led cadet training in geography and environment, and ensured academic excellence and discipline.

7. **Academic Instructor** *December 2014 to June 2017*
   Bangladesh Military Academy *(Captain, Bangladesh Army- Education Corps)*
   - Taught Geography, Environmental Studies, and Geopolitics, trained cadets in map reading using ArcGIS, and developed course materials for academic development.

8. **General Staff Officer** *December 2012 to December 2014*
   Cumilla Cantonment *(Lieutenant, Bangladesh Army- Education Corps)*
   - Managed soldier academic training and map reading courses, coordinated interagency exercises, streamlined administration, and developed specialized training modules.

Reviews

Reviewer of Elsevier journal, *Progress in Disaster Science*:

- Reviewed Flood risk and Mental Health: a systematic review and applications for flood risk management.

Reviewer of Elsevier journal, *Sustainable Cities and Society*:

- Reviewed Geospatial Assessment of Heatwave Vulnerability Zones in Gorakhpur, Uttar Pradesh, India: A Multi-Criteria Geographic Information System and Analytic Hierarchy Process Approach.

Reviewer of Springer Nature journal *Spatial Information Research:*

- Reviewed A concordance-based spatial diagnostic framework for identifying persistent crop-resource intensity in a Mediterranean river basin.

Reviewer of Springer Nature journal *Discover Environment:*

- Reviewed Assessing Drought-Induced Livelihood Vulnerability in the Barind Tract of Northwestern Bangladesh Using the LVI-IPCC Framework

Reviewer of Springer Nature journal *Discover Sustainability:*

- Reviewed Impact of maize production on poverty alleviation among farmers in the Pabna District of Bangladesh

Reviewer of Springer Nature journal, *Scientific Data:*

- Reviewed Medicinal plant leaf image dataset of 13 species collected in Bangladesh

Reviewer of Springer Nature journal, *Theoretical and Applied Climatology:*

- Reviewed Season-Specific Climate Sensitivities of Aus, Aman, and Boro Rice Across Seven Hydro-Climatic Zones of Bangladesh: A 40-Year Spatiotemporal Analysis (1981–2021)
- Reviewed Performance Assessment of CMIP6 Models in Reproducing Bangladesh's Rainfall and Temperature Using MCDM Ensembles and Individual GCMs

Reviewer of Springer Nature journal, *Earth Systems and Environment:*

- Reviewed Spatiotemporal Mapping of Wildfire Zonation and Drought Analysis in Nova Scotia Using Machine Learning and Remote Sensing Techniques.
- Reviewed Storm-Scale Evaluation of GIS-Based Bias Correction for Reflectivity-Derived Radar Rainfall during Tropical Storm Son-Tinh in Central Thailand
- Reviewed Winter Evaporation and Salt Evolution in Deep Brine: Sand-Gravel Pore Insights from Da Lang Tan
- Reviewed Long-Term Variations and Isotopic Evidence Show Source and Driver Shift of Sulfate During Past Decades in Large Freshwater Taihu Lake, China
- Reviewed Terrestrial Oil Spill Susceptibility Mapping Using Machine Learning Models with eXplainable Artificial Intelligence (XAI)

- Reviewed Spatial Modeling and Statistical Validation of Desertification Sensitivity Using MEDALUS and Climatic Water Deficit in the Oued Rdat Basin
- Reviewed Insights into Sand-Gravel Pore Brine Evaporation in the Qaidam Basin
- Reviewed AI-Enhanced GRACE Downscaling Reveals Groundwater Depletion Hotspots in Pakistan's Indus Basin
- Reviewed Beyond Spatial Learning: FFEN for Frequency Aware for Hyperspectral Image Classification
- Reviewed Enhanced Meteorological Drought Monitoring Using Spatiotemporal Dynamics and Hybrid Weighting Techniques
- Reviewed Event-Scale Evaluation of GIS-Based Bias-Ratio Correction for Reflectivity-Derived Radar Rainfall during Tropical Storm Son-Tinh in Central Thailand
- Reviewed Assessment of internal nutrient loading in a volcanic barrier lake: Coupled dynamics and release fluxes of N, P, and Si in sediment pore water
- Reviewed A SAR-Based Shoreline Analysis in the Mexican Caribbean for Coastal Conservation and Sustainable Management
- Reviewed A Data-Driven Framework for Spatiotemporal Meteorological Drought Monitoring Using Reconstruction-Error Station Reliability and Fuzzy Temporal Severity Characterization.
- Reviewed The Future of Sinking Coastal Cities in Java.
- Reviewed Winter Wheat Yield Forecasting: Integration of Climate and Management Factors Using Machine Learning.
- Reviewed Climate Change Will Expand Invasion Corridors Across Boyacá's Páramo Ecosystems by 2100.
- Reviewed Regional shoreline, coastal-water bodies, and insular dynamics analysis in the Mexican Caribbean using Sentinel-1 SAR imagery: A semi-automatic coastal study.

Reviewer of Revue Internationale de Géomatique (International Journal of Geomatics)

- Reviewed "Modelling Future Land Use/Land Cover Change using MOLUSCE Simulation Framework in Garhwal Himalaya, India".

Reviewer of the *Journal of Geography, Environment and Earth Science International*:

- Reviewed Settlement Distribution and Coastal Vulnerability in the Andaman Islands: A Spatial Analysis

Reviewer of the *Asian Journal of Geographical Research:*

- Identification of Suitable Landfill Sites Based on Environmental Parameters in Sahneh County, Western Iran

Reviewer of the *Asian Journal of Environment & Ecology:*

- Ecotourism Under Pressure: Analyzing the Socio-Economic Impacts of COVID-19 on Peri-Urban Conservation Sites in the Democratic Republic of Congo.

Reviewer of *BP International:*

- Reviewed a Book Chapter entitled "Comparing the Effect of Deforestation Result by NDVI and SAVI".
- Reviewed a Book Chapter entitled "Changes in Urban Green Systems and Their Implications for Ecosystem Service Access: Evidence from Dar es Salaam, Tanzania".

Professional Courses

- Pre-Commission Training and Post-Commission Training in Bangladesh Army, 2012
- Education Officer Basic Course in Bangladesh Army, 2013
- Standard & Advanced Map Reading course in Bangladesh Army, 2013
- Junior Command and Staff Course in School of Infantry and Tactics in Bangladesh Army, 2017
- Pre-deployment training on United Nations Peacekeeping mission in Bangladesh Institute of Peace Support Operation Training (BIPSOT), 2020

Professional Affiliations

- Member, American Association of Geographers (AAG)
- Member, American Geographical Society (AGS)

- Member, Association of Pacific Coast Geographers (APCG)
- Member, American Geophysical Union (AGU)
- Member, National Environmental Health Association (NEHA)
- Member, American Public Health Association (APHA)
- Member, International Society for Environmental Epidemiology (ISEE)
- Member, International Society for Urban Health (ISUH)
- Professional, Women in Geospatial Science and Health
- Founding member of GREENS - GIS Research for Environment and Sustainable Solutions
- Member, Army Officers Club

Community Engagement

- Volunteered with Worcester Regional Council, Worcester, MA, USA, January 2026
- Member of Disaster and Development Organization (2018–Present)
- Participate in the national Tree Plantation Program, Bangladesh (2012 to 2024)
- Say No to Drug campaign, Bangladesh (2019 to 2024)
- Eve teasing protesting activities against teen girls, Bangladesh (2019 to 2024)
- COVID awareness program, Bangladesh (2020 to 2023)
- Environmental awareness program, Bangladesh (2005 to 2024).