Atif Aninda Rahman

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RESEARCH INTERESTS

Urban Accessibility • Mobility Equity • GIScience • GeoAI • Spatial Statistics • Remote Sensing • Transportation

I aim to use GeoAI to fill infrastructure and mobility data gaps, supporting more equitable accessibility research

EDUCATION

University of Denver — Denver, CO

M.S., Geographic Information Science — Expected June 2027

- GPA: 3.95/4.00
- Capstone: Developing a slope-adjusted pedestrian network model to measure 15-minute city accessibility across the Denver-Aurora-Lakewood region, integrating spatial equity metrics to identify underserved neighborhoods.
- Relevant Coursework: Geospatial Artificial Intelligence, Advanced Python Programming in GIS, Geographic Information Analysis

Khulna University of Engineering & Technology (KUET) — Khulna, Bangladesh

B.U.R.P., Urban and Regional Planning — Apr 2022

- GPA: 3.48/4.00
- Thesis: Multi-criteria suitability analysis for green infrastructure using Google Earth Engine.

RESEARCH EXPERIENCE

University of Denver — Denver, CO

Graduate Researcher — Sep 2025 - Present

- Urban Accessibility Modeling: Developed a slope-adjusted pedestrian network model measuring grocery and transit accessibility across the Denver-Aurora-Lakewood region.
- Spatial Statistics Analysis: Tested spatial relation between urban amenities and demographic indicators using Global & Local Moran's I, Getis-Ord Gi* hot spot analysis, and Geographically Weighted Regression finding that ~1.5 million residents lack walkable grocery access, concentrated in outer suburbs of the city.
- US City Accessibility Clustering: Standardized urban accessibility metrics via z-scores and applied hierarchical clustering to group US cities by similarity, revealing spatial accessibility patterns.
- 15-Minute City Accessibility Tool: Designed a configurable ArcPy tool in ArcGIS Pro to score and rank neighborhood-level 15-minute accessibility (schools, parks, food retail, transit, healthcare) across Denver.
- Solar Siting Suitability Model: Built a multi-criteria suitability model for solar energy siting across Colorado, combining SolarGIS irradiance data with USGS protected area constraints in an open source geospatial python workflow.

Center for Environmental and Geographic Information Services (CEGIS) — Dhaka, Bangladesh

Research Consultant-Energy & Infrastructure Geospatial Analytics — Mar 2023 - Aug 2025

- Built end to end geospatial data pipelines integrating multispectral satellite imagery, UAV data, and vector datasets for infrastructure feasibility.
- Automated calculation of gas pipeline route angle points using python to support safe infrastructure design.
- Conducted automated LULC classification from high resolution imagery and produced analytical spatial datasets for environmental impact assessments.

SHATOTTO Architecture for Green Living — Dhaka, Bangladesh

Urban Planner (Integrated City Master Plan, Dhaka (2020–2050)) — Aug 2022 - Mar 2023

- Performed large-scale geospatial analysis across 70 urban wards executing LULC change detection.
- Authored a GIS-based traffic management plan analyzing road networks and route optimization across the same 70 urban wards.

University of Florida (Remote Mentorship) Gainesville, FL
Machine Learning Researcher Jan 2024

- Built and trained a ResNet50 convolutional neural network to classify COVID-19 from over 21,000 chest X-ray images.
- Built a reproducible, end to end ML pipeline in TensorFlow to train and evaluate the model, achieving ~80% classification accuracy.

TEACHING EXPERIENCE

University of Denver Denver, CO
Graduate Teaching Assistant Sep 2025 - Present

- Supported instruction in computer cartography and GIS spatial analysis, emphasizing data quality and analytical workflows.
- Led weekly lab sessions helping over 25 students understand spatial data processing and visualization.
- Reviewed and evaluated analytical assignments, ensuring accuracy, consistency, and proper interpretation.
- Conducted Courses: Computer Cartography, GIS in Urban Analytics, Intro to GIS, GIS Database Design.

TECHNICAL SKILLS

Geospatial & Network Analysis: ArcGIS Pro, ArcPy, QGIS, OSMnx, NetworkX, GeoPandas, GDAL, Rasterio
Programming: Python, SQL, Pandas, NumPy, PySAL
Spatial Statistics: Moran's I, Getis-Ord Gi*, Geographically Weighted Regression (GWR)
Machine Learning / GeoAI: TensorFlow, Keras, CNN/ResNet50, Google Earth Engine
Remote Sensing: Multispectral & UAV Imagery Analysis, LULC Classification

AWARDS & ACHIEVEMENTS

Graduate Teaching Assistantship, University of Denver Sep 2025-Present
Merit-based appointment to conduct lab in ArcGIS Pro and spatial analysis methods.

Dean's Award, Faculty of Civil Engineering, KUET Mar 2023
Awarded for achieving a GPA of 3.75 or higher across both semesters of a single academic session during undergraduate study.

Technical and Compensatory Scholarship, Faculty of Civil Engineering, KUET Feb 2017 – Apr 2022
Merit-based scholarship awarded for consistently satisfactory academic performance across all terms of the undergraduate program.

PUBLICATIONS

- Nitu, S.F.F., **Rahman, A.A.**, & Haque, M.N. (2020). COVID-19 Scenario and Possible Crisis Management Plan in Bangladesh: A Review. *Journal of Engineering Science*, 11(2), 45–60. [DOI]
  Led the core data analysis behind a 10-sector crisis response framework (education, economy, government, medical services, and others), evaluating Bangladesh's pandemic-era policy response and proposing a coordination structure for future crises.
- Haque, M.N., Alam, I., & **Rahman, A.A.** (2021). Assessment of Ecosystem Services and Disservices in Urban Environment Using Multispectral Image Analysis and Geospatial Mapping. *MIST International Journal of Science and Technology*, 9(1), 55–65. [DOI]
  Led the core geospatial analysis, tracking ecosystem service and disservice change across two Khulna City Corporation wards over 15 years (2005–2020) using NDVI, NDBI, DEM, and service area analysis to map rising built-up area and vegetation loss against worsening drainage and waste management.