Ratul Debnath

GEOSPATIAL ANALYSIS / INFRASTRUCTURE / URBAN PLANNING

The Woodlands, Texas | ratuldebnathgis@gmail.com

ratul-debnath-portfolio.vercel.app | LinkedIn | Google Scholar

PROFESSIONAL PROFILE

GIS professional with graduate degrees in Geographic Information Systems and Urban and Regional Planning. Combines infrastructure and consulting experience with university research and teaching. Connects reliable asset data, field observations, and spatial analysis to clear maps, practical tools, and informed decisions.

CORE CAPABILITIES

Geospatial analysis | ArcGIS Pro & ArcGIS Online · Geodatabases & spatial QA/QC · Network Analyst & location-allocation · Cartography & spatial statistics

Field & operational GIS | Survey123 Connect & Field Maps · Experience Builder & Dashboards · Class Location, HCA & MCA analysis · Pipeline data & integrity-risk inputs

Research & planning | LiDAR & remote sensing · UAV multispectral analysis · Python / TensorFlow research workflows · Land use, transit access & resilience

Additional tools: Python/ArcPy basics, SQL queries and joins, ERDAS IMAGINE, and AutoCAD 2D familiarity.

PROFESSIONAL EXPERIENCE

GIS Pipeline Integrity Analyst

Centric Infrastructure Group

Aug 25, 2025 - Present | The Woodlands, Texas | Promoted from GIS Intern.

- Maintain and validate pipeline and service-line datasets, reconciling geometry, attributes, inspection records, and environmental information.
- Prepare Class Location, High Consequence Area, and Moderate Consequence Area analyses and maintain segment-level integrity-risk inputs.
- Build Survey123 Connect forms and Experience Builder applications for field data collection, review, and communication with operational teams.

Previous role: GIS Intern | Jun 2, 2025 - Aug 23, 2025

Graduate Assistant · GIS, Cartography & Remote Sensing

Sam Houston State University

Sep 2023 - May 2025 | Huntsville, Texas | Part-time university appointment

- Supported faculty and more than 100 students using ArcGIS Pro, ArcGIS Online, and ERDAS IMAGINE.
- Reviewed maps and analytical work, explained spatial methods, and provided practical troubleshooting guidance.

Research Assistant

University of Hawai'i at Mānoa · NDPTC

Sep 2021 - Dec 2022 | Honolulu, Hawai'i | Part-time research appointment

- Coordinated multi-island observational field-data collection for disaster preparedness, mobility, and transportation-safety research.
- Performed geocoding, spatial visualization, and completeness review for technical reports and research presentations.

Ratul Debnath

EXPERIENCE / EDUCATION / RESEARCH

Graduate Assistant · GIS & Transportation Planning Research

Alabama A&M University

Aug 2019 - Aug 2021 | Normal, Alabama | Part-time research appointment

- Developed a walkable-service-area equity model using ArcGIS Network Analyst to identify uneven access.
- Created calibrated trip-generation models for Madison County and contributed to planning studies and conference presentations.

Survey Supervisor

DevConsultants Limited

Feb - Mar 2019 | Dhaka, Bangladesh | Project appointment

- Supervised road-safety surveys covering speed, seat-belt and helmet use, and pedestrian behavior.

GIS & Planning Coordinator

Professional Associates Ltd.

Mar 2017 - Jan 2019 | Dhaka, Bangladesh | Business Development and Planning Department

- Conducted GPS surveys, rectified imagery, and prepared land-use, road-alignment, and environmental maps.
- Supported multidisciplinary infrastructure studies, including a proposed 935-km ring-road study and an urban corridor plan.

EDUCATION & CREDENTIAL

M.S. Geographic Information Systems

Sam Houston State University | August 2025 | GPA 4.00 / 4.00

Master of Urban & Regional Planning

Alabama A&M University | December 2021 | GPA 3.72 / 4.00

Bachelor of Urban & Regional Planning

Khulna University of Engineering & Technology | August 2016 | Bangladesh

FAA Part 107 Remote Pilot Certificate | May 2025

SELECTED GEOSPATIAL PROJECTS

Conroe flood exposure. LiDAR building models and flood-zone overlays for a structural exposure inventory.

Port Arthur transit access. Network analysis supporting 15 proposed sheltered-stop locations within a 400-meter walking framework.

UAV multispectral research. Python/TensorFlow CNN prediction of switchgrass nitrogen content; reported R^2 of 0.8388 and RMSE of 0.0071.

PUBLISHED RESEARCH

8 publications spanning infrastructure integrity, remote sensing, flood resilience, landslide monitoring, and applied research.

View the complete publication list | Google Scholar