Jintu Moni Bhuyan

Contact Information
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Technical and Research Expertise

Remote Sensing, SAR and LiDAR Data Processing, Multi-temporal Change Detection, Optical+SAR Data Fusion, Time Series Analysis, Feature Extraction, AI/ML for Geospatial Applications, Carbon Sequestration Modeling, UAV-based Data Acquisition, Google Earth Engine, Geospatial Workflow Automation, Python for Remote Sensing (GDAL, Rasterio, EarthPy), MATLAB for Spatial Data Analysis, QGIS, ArcGIS, Cloud-based Geospatial Processing (e.g., GEE, Google Colab)

Work and Research Experience

- **Project Research Associate** *Aug 2024 - Present*
  Indian Institute of Technology, Bombay
  Research Project: Maharashtra Drone Mission
  Sub Theme: Forest Dynamics (Related to Forest Fire)
  Supervisor: Prof. Parmeshwar D. Udmale

- **Project Research Assistant** *June 2024 – Aug 2024*
  Indian Institute of Technology, Bombay
  Research Project: Maharashtra Drone Mission
  Sub Theme: Forest Dynamics (Related to Forest Fire)
  Supervisor: Prof. Parmeshwar D. Udmale

- **Research Intern** *Feb 2024 – May 2024*
  International Water Management Institute (IWMI), Delhi, India
  Research Theme/Project: Water Data Science and Digital Innovation
  Supervisor: Dr. Surajit Ghosh, Regional Researcher – Water Risk and Data Sciences Specialist

Academic Projects

- **M.Tech. Project**
  Title: Carbon Bookkeeping for Large-Scale Tropical Deforestation in Eastern Himalayan Foothills, Northeast India
  Supervisor: Dr. Subrata Nandy (Scientist SF, Indian Institute of Remote Sensing)

- **M.Sc. Project**
  Title: Geo-environmental Setting of a Proposed Bird Sanctuary: A Case Study of Satajaan Beel, Lakhimpur, Assam
  Supervisor: Dr. Pallavi Sarma (Asst. Prof., Gauhati University)

Education

- **M.Tech. in Remote Sensing and GIS** (CGPA: 8.48) *2022 - 2024*
  (Specialization: Forest Resources and Ecosystem Analysis)
  Indian Institute of Remote Sensing, ISRO, Dehradun, India

- **M.Sc. in Environmental Science** (CGPA: 8.81) *2020 - 2022*
  Gauhati University, Assam, India

- **B.Sc. in Geography** (CGPA: 8.65) *2017 - 2020*
  Gauhati University, Assam, India

Technical Skills

- **Programming:** Python (Proficient), R (Proficient), Matlab (Proficient)
- **Software/Platforms:** ArcGIS, QGIS, ERDAS, SNAP, Pix4D, eCognition, Google Earth Engine.

- **Remote Sensing:** Optical, LiDAR, Microwave, Thermal RS
- **Languages:** English (Proficient), Hindi, Assamese

Achievements

- DGCA Certified UAV Pilot (Licensed Pilot)
- Qualified GATE (GE) - 2023, organized by IIT Kanpur
- Qualified GATE (GE) - 2024, organized by IISc Bangalore
- Second Prize for Poster Presentation at Hindi Sangusthi-2023, IIRS-ISRS

Publications

- Bhuyan, J.M., Nandy, S., Padalia, H. et al. (2025). Harnessing Time-Series Satellite Data and Deep Learning to Monitor Historical Patterns of Deforestation in Eastern Himalayan Foothills of India. *J Indian Soc Remote Sens.* DOI
- Bhuyan, J. M., Pradhan, K., Kumar, B., and Yadav, M. (2025). Utilizing Google Earth Engine and remote sensing with machine learning algorithms for assessing carbon stock loss and atmospheric impact through pre- and post-fire analysis. *In Google Earth Engine and Artificial Intelligence for Earth Observation* (pp. 287–302). Elsevier. DOI
- Bhuyan, J. M., & Sharma, P. (2023). A study on the water quality and the change detection of the aquatic vegetation of Satajaan beel, North Lakhimpur, Assam. *Research Square.* DOI
- Bhuyan, J. M. (2021). Environmental Degradation of Satajaan Beel, Lakhimpur, Assam. *IJRASET, 9(9), 947–954.* DOI

Paper/Poster Presentations

- Thapa, A., Nath, A., and Bhuyan, J. M. (2025, March 20–21). Habitat suitability analysis using AHP for Indian pangolin (Manis crassicaudata) in Motichur Block, Uttarakhand, India. Paper presented at the National Seminar on Environment and Biodiversity: Issues and Challenges, Himachal Pradesh University, Shimla, India, pp. 86–87. (Paper Presentation)
- Bhuyan, J., Nandy, S. (2024). Monitoring Tropical Deforestation Using Time-Series Satellite Data and Deep Learning in Eastern Himalaya. *IIRS Academia Meet, 2024.* (Poster Presentation)
- Bhuyan, J., Yadav, M., & Kumar, B. (2023). Temporal Analysis of Urbanization and Urban Heat Island Development in Kamrup District, Assam. *Hindi Sangusthi, IIRS-ISRS, 2023.* (Paper Presentation)
- Deka, K., Bhuyan, J., & Pandey, K. (2023). GIS-based Assessment of Flood-Induced Ecological Vulnerability in Assam. *ISG-ISRS National Symposium, 2023, Pune.* (Paper Presentation)

Short Module Projects

- Creating Cloud-based Web Applications for generating various indices and their 3D Visualisation. (2023) (URL: `https://jintu-moni-bhuyan.users.earthengine.app/view/indextracter`)
  Collaborator: Mridul Yadav (Geoscience Department, IIRS)
- Seasonal variation analysis of land surface temperature (LST) with normalized difference vegetation (NDVI) index and estimation of evapotranspiration (ET) using Python. (2023)
  Co-author: Prasun Kumar Gupta (Scientist SF, Geoinformatics, IIRS)
- Forest fire risk mapping using analytical hierarchy process (AHP) in GIS software: a case of Malkangiri, Odisha. (2022)
  Co-author: Kakali Deka (Urban and Regional Studies Department, IIRS)

Field Experience

- Conducted field surveys for above-ground biomass estimation, carbon stock assessment, and ecological data collection in the foothills of the North-East Himalaya.
- Performed extensive ground truthing, validation of LULC classification using UAV and remote sensing data, and engaged in field measurements with spectroradiometric techniques for vegetation monitoring.
- Collected and analyzed water quality data, integrated plot-based analysis for comprehensive environmental assessments.

References

- Dr. Subrata Nandy, Scientist SF, Forestry and Ecology Dept., IIRS-ISRO (Email: nandy@iirs.gov.in)
- Dr. Taibanganba Watham, Scientist SE, Forestry and Ecology Dept., IIRS-ISRO (Email: taibang@iirs.gov.in)
- Prof. Parmeshwar D. Udmale, CTARA, IIT Bombay (Email: udmale@iitb.ac.in)