

CURRICULUM VITAE

HASAN AHMED

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EDUCATION

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| Current | Ph.D. in Geography and Environmental Systems
University of Maryland, Baltimore County, MD, USA. |
| 2021 | M.S. in Geo-information Science and Earth Observation
Specialization in Natural Resources Management
University of Twente. (Faculty ITC), Enschede, The Netherlands |
| 2018 | M.S. in Forestry (With Distinction)
Shahjalal University of Science and Technology, Sylhet, Bangladesh |
| 2016 | B.S. (Honors) in Forestry
Shahjalal University of Science and Technology, Sylhet, Bangladesh |

RESEARCH EXPERIENCE

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| Nov 2024 –
Feb 2025 | Graduate Research Fellow
NASA Jet Propulsion Laboratory (JPL)
Sub-orbital Radar Science and Engineering <ul style="list-style-type: none">• Contributed with GIS and Earth Observation analysis to a SERVIR Amazonia project, “<i>Land Cover Mapping with SAR and Optical Observations</i>”, with the Applied Science Team (AST) to create land-cover maps using SAR and Optical Observations.• Conducted advanced geospatial analysis to map agroforestry, perennial crops, stable forests, deforestation, and forest degradation.• Reproduced and updated forest disturbance maps (based on spectral unmixing; CODED and LandTrendr) as input layers for the mapping.• Assessed the accuracy of land-cover and forest disturbance maps.• Created Python scripts to integrate them into the crop mapping module. |
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- Jan 2022 – **Research Assistant**
Dec 2023 ***University of Maryland, Baltimore County (UMBC)***
- Collaborated with NASA JPL project: Mapping Tropical Forest Degradation in the Peruvian Amazon Using Synthetic Aperture Radar and Optical Observations.
 - Contributed to NASA LCLUC project: Making the Hidden Visible: Accelerated Land-Use Change and Degradation Caused by Narco-Trafficking In and Around Central America's Protected Areas.
 - Contributed to research proposals and created hazard monitoring scripts using Python and Google Earth Engine.
 - Compiled, cleaned, and analyzed data; created visual representations suitable for publications.
- Jan 2018 – **Research Assistant**
Dec 2018 ***University of Lisbon (Ulisboa)***
Centre for Ecology, Environment, and Evolution
- Analyzed earth observation data for mangrove/coastal land-cover change detection.
- Oct 2015 – **Intern**
Dec 2015 ***Creative Conservation Alliance, Dhaka, Bangladesh***
- Developed the species distribution map of pythons in Bangladesh's forests.

TEACHING EXPERIENCE

- 2021 – **Teaching Assistant**
Present ***University of Maryland, Baltimore County (UMBC)***
Instructed courses as a Teaching Assistant:
- GES 400/774: Statistics for Geographers
 - GES 386: Introduction to GIS
 - GES 381: Remote Sensing
 - GES 286: Exploring the Environment: A Geospatial Perspective
 - GES 220: Lab and Field Techniques for Environmental Science
 - SCI 100: Water; An Interdisciplinary Study (lead lab sections)
- Dec 2018 – **IELTS Instructor**
July 2019 ***FM Method, Sylhet, Bangladesh***
- Teaching potential IELTS candidates to prepare for the test.
 - Developed teaching and practice materials; executed mock tests.

- Provided training to fellow instructors on teaching and IELTS evaluation process.

Jan 2017 – **Instructor**

Jan 2018 ***Forestry Science and Technology Institute, Sylhet, Bangladesh***

Courses Taught:

- Forest Silviculture
- GIS for Forestry
- Forest Inventory

TECHNICAL SKILLS

Remote Sensing & Geospatial Analysis

- **Satellite Image Analysis:** Multispectral and hyperspectral processing for land cover classification, forest degradation mapping, and change detection
- **SAR & LiDAR Applications:** Use of Synthetic Aperture Radar (ALOS-PALSAR, Sentinel-1) and LiDAR (spaceborne, airborne) for forest structure, biomass, and canopy dynamics
- **Spatial Statistics:** Expertise in environmental modeling and geostatistical analysis.
- **Machine & Deep Learning:** Implement supervised/unsupervised models for land cover mapping, anomaly detection, and predictive analytics.
- **Forest Monitoring Systems:** Integration of multi-sensor, multi-resolution data to assess tropical forest disturbance and recovery

Geospatial Software & Image Processing

- **GIS Software/Platforms:** ArcGIS Pro, ArcGIS Online, QGIS
- **Remote Sensing Suites:** ERDAS IMAGINE, ENVI, eCognition for classification, object-based image analysis, and change monitoring
- **3D & Photogrammetry Tools:** Pix4D, Agisoft Metashape for UAV-based canopy modeling and structure-from-motion workflows
- **Database & Portal Management:** Development and administration of geodatabases and geospatial portals for research and decision-support

Programming & Computational Environments

- **Languages:** Python, R, Visual Basic
- **Cloud & APIs:** Google Earth Engine (JavaScript & Python APIs), AWS
- **Python Ecosystem:** Proficient with various Python libraries for LiDAR pipelines, SAR analysis, spatial ML, and visualization
- **Statistical Environments:** Advanced R workflows for ecological modeling, uncertainty analysis, and visualization
- **High-Performance Data Handling:** Skilled in parallel processing, AWS S3 workflows, and large-scale raster/vector computation.

AWARDS & SCHOLARSHIPS

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| 2025 | CAHSS Dean's Summer Fellowship (\$ 6,000) <ul style="list-style-type: none"> • For Doctoral Research: "Analyzing Forest Degradation Across Biophysical Gradients Using Airborne and Spaceborne LiDAR" |
| 2024 | CAHSS Dean's Summer Fellowship (\$ 6,000) <ul style="list-style-type: none"> • For Doctoral Research: "Analyzing Forest Degradation Across Biophysical Gradients Using Airborne and Spaceborne LiDAR" |
| 2023 | Department of GES Summer Fellowship (\$ 4,000) <ul style="list-style-type: none"> • For Doctoral Research: "Analyzing Forest Degradation Across Biophysical Gradients Using Airborne and Spaceborne LiDAR" |
| 2019 - 2021 | ITC Excellence Scholarship (€ 36,525) <ul style="list-style-type: none"> • For M.Sc. in Geo-information Science and Earth Observation Program |
| 2019 - 2021 | The Holland Scholarship (€ 10,000) <ul style="list-style-type: none"> • For M.Sc. in Geo-information Science and Earth Observation Program |
| 2019 | Erasmus Mundus Scholarship (€ 49,000) <ul style="list-style-type: none"> • Ranked 14th out of the first 20 selected candidates for MEDfOR M.Sc. • Accepted ITC Excellence and Holland Scholarships instead of this program |

PUBLICATIONS AND PRESENTATIONS

Ahmed, H., Fagan, M.E., and N.S. Pinto. "Comparing the performance of satellite-based forest degradation products in the Peruvian and Brazilian Amazon." In AGU Meeting 2024, Global Environmental Change, Washington DC, USA. 2024.

Saha, S, Uddin, M.B., and **H. Ahmed**. "Detection of Forest Cover Change and Spatial Prediction of Growing Stock in Satchari National Park, Bangladesh." In Young Researchers Meeting on Conservation and Sustainable Use of Forest Systems, 2023, Palencia, Spain. Feb 2023.

Ahmed, H., Pinto, N.S., and M.E. Fagan. "Evaluating the Sensitivity of Spectral and Synthetic Aperture Radar-based Forest Degradation Products in the Peruvian Amazon Forest." In AGU Fall Meeting 2022, Biogeosciences, Chicago, IL, USA. 2022. DOI: 10.1002/essoar.10512892.31.

Ahmed, H. "A comparison between UAV-RGB and ALOS-2 PALSAR-2 images for the assessment of aboveground biomass in a temperate forest." Master's thesis, University of Twente, Enschede, Netherlands. 2021.

Rahman, M.R., Sajib, E.H., Chowdhury, I.M., Banik, A., Bhattacharya, R., and **H. Ahmed**. "Present scenario of COVID-19 in Bangladesh and government preparedness for facing challenges." J Adv Biotechnol Exp Ther 4, no. 2 (2021): 187-199.

Roy, B., **Ahmed, H.**, and G.P. Penha-Lopes. "Morphological change detection caused by seasonal monsoon and cyclones in the coast over time: a case study on Bangladesh delta." In EGU General Assembly Conference Abstracts, p. 1469. 2019.

Ahmed, H. "Assessing spatio-temporal changes in forest structural attributes at Lawachara National Park, Bangladesh." Master's thesis, Shahjalal University of Science and Technology, Sylhet, Bangladesh. 2018.

Ahmed, H. "Detecting tree richness hotspots using Species Area Relationships to compare with land-covers and forest composition of Rema-Kalenga Wildlife Sanctuary, Habiganj, Bangladesh." Bachelor's thesis, Shahjalal University of Science and Technology, Sylhet, Bangladesh. 2016.

PEER-REVIEW EXPERIENCE

2025 - Present Nature

2023 - Present International Journal of Applied Earth Observation and Geoinformation

WORKSHOPS/TRAINING ATTENDED

An Introduction to Synthetic Aperture Radar (SAR) and Its Applications. NASA Applied Remote Sensing Training Program. November 2024.

Large Scale Applications of Machine Learning using Remote Sensing for Building Agriculture Solutions. NASA Applied Remote Sensing Training Program. March 2024.

Overview of SeaDAS 8.4.1 for the Processing, Analysis, and Visualization of Optical Remote Sensing Data for Water Quality Monitoring. NASA Applied Remote Sensing Training Program. February 2024.

Spectral Indices for Land and Aquatic Applications. NASA Applied Remote Sensing Training Program. November 2023.

Selecting Climate Change Projection Sets for Mitigation, Adaptation, and Risk Management Applications. NASA Applied Remote Sensing Training Program. September 2022.

Species Distribution Modeling with Remote Sensing. NASA Applied Remote Sensing Training Program. August 2021.

Neural Networks and Deep Learning. DeepLearning.AI (through Coursera Online). February 2021.

Tailor-made Training on the Use of UAV Images for the Application of Remote Sensing on Natural Resources. Faculty ITC, University of Twente, Enschede, the Netherlands. April 2018.

Documentary Film Making and Nature Documentation. Green Explore Society, Shahjalal University of Science and Technology, Sylhet, Bangladesh. March 2014.

Training on SPSS and MATLAB. Department of Forestry and Environmental Science, Shahjalal University of Science and Technology, Sylhet, Bangladesh. April 2013.

LEADERSHIP ACTIVITIES

Mar 2014 – **President**

Apr 2015 *Green Explore Society*

Shahjalal University of Science and Technology

- Administered the organization to promote public awareness of nature conservation and support research on environmental issues, engaging students across multiple departments.
- Provided strategic leadership by coordinating the executive team, managing activities, and ensuring alignment with organizational goals.
- Represented the organization to the university and external stakeholders, fostering collaborations and enhancing visibility..

Jan 2014 – **Co-founder & Vice-President**

Dec 2015 *Golap-Bandhan Student Association*

Shahjalal University of Science and Technology

- Co-founded the association to promote the welfare and support of students from Golapganj, Sylhet, establishing its vision and objectives.
- Led student meetings, coordinated the executive team, and facilitated collaboration among members.
- Planned and managed programs, activities, and events to strengthen community engagement and student support.

Mar 2013 – **Treasurer**

Mar 2014 *Green Explore Society*

Shahjalal University of Science and Technology

- Managed budgeting, accounts, and financial transactions, including membership dues, fundraising proceeds, and expense tracking, in compliance with university policies.
- Prepared financial reports and advised the executive board to support transparent decision-making and successful event planning.

Mar 2011 – **General Member**

Dec 2015 *KIN, A Voluntary Organization of SUST*

Shahjalal University of Science and Technology

- Contributed to core initiatives such as KIN School, winter clothing distribution, and social awareness campaigns, supporting efforts to uplift underserved communities.

Jan 2011 – **General Member**

Dec 2018 *Bangladesh Professional Forestry Students Association (BPFSA)*

Shahjalal University of Science and Technology

- Participated actively in departmental and professional events, such as workshops, seminars, and field visits, supporting event logistics and engagement to promote forestry awareness and education.