

TANVEER HOSSAIN MUNIM

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Full-stack ML/backend engineer with 5 years building operational AI and geospatial systems for UN and World Bank projects spanning South Asia and the Pacific. Sole engineer behind Timor-Leste's national meteorological platform; currently shipping VLM systems for government-scale Bengali document extraction and LLM infrastructure at AI GeoLAB. Research published in peer-reviewed venues; Bangladesh NST Fellow (2026).

TECHNICAL SKILLS

AI/ML & Data Science

PyTorch, LangChain/LangGraph, RAG, GANs, Computer Vision, Apache Airflow, ETL Pipelines

Backend & APIs

Django, FastAPI, Flask, Celery, REST/GraphQL

Languages

Python, JavaScript, Java, C++, SQL

Cloud & Infrastructure

AWS (EC2, S3, Lambda, RDS, ...), Docker, Kubernetes, Redis, PostgreSQL, MongoDB, CI/CD

Geospatial

xarray, GeoPandas, GDAL, Rasterio, QGIS, PostGIS, Deck.gl, WebGL, NetCDF

Frontend

React, Next.js

PROFESSIONAL EXPERIENCE

AI GeoLAB

April 2026 – Present

Senior Research Engineer

- Designed **Khatian VLM cascade**: fine-tuned Qwen3-VL-2B for Bengali land-record extraction (Form 5462) at Bangladesh government scale (396,802 images, 6 regions); **98.9% JL precision @ 94% auto-accept**. Targeting ICDAR 2027.
- Built **NLAS**: 7B LLM on 4GB GPU (Qwen2.5-7B Q4_K_M, llama.cpp, hybrid RAG); production livestock advisory chatbot for Bangladesh DLS, **71% beta satisfaction**.
- Built **Cirrus AI**: Qwen 3B full fine-tune via frontier-model distillation for DNMG forecasters; in production.

Space Research and Remote Sensing Organization (SPARRSO)

August 2025 – Present

Research Associate

Remote sensing ML and geospatial AI research; co-authoring August 2024 Bangladesh flood analysis paper targeting GRL/NHESS.

Regional Integrated Multi-Hazard Early Warning System (RIMES)

July 2024 – August 2026

Senior Software Engineer

- Sole backend & infrastructure engineer for **GCF Timor-Leste CDIS**: country's national meteorological platform (UNEP \$21.7M GCF); **97.64% task success, 1TB+/day**, 1.4+ years uptime.
- Built Apache Airflow ETL pipeline (~**8K tasks/day**, 11 DAGs) ingesting 4 NWP models, 2 geostationary satellites, WIS2/METAR/tide-gauge observation networks.
- Built **CAP v1.2** emergency alert system with multi-channel dissemination via n8n (RSS, Facebook Graph API, Twitter/X). FFWC DSS 15-day flood forecast pipeline (World Bank).
- Built **Heatshield** (ICDDR,B): hybrid RAG chatbot slated for national rollout via DAE/BAMIS platform.

Interactive Cares

June 2023 – August 2024

Tech Lead

- Scaled platform **13**× (8K → 100K users) and **8**× DAU; co-led **Accelerating Asia** victory (Top 9 of 500+, \$100K). Grew engineering team 2 → 8; CI/CD cut deployment time 60%.

Shipday, Inc.

Sept 2023 – Jan 2024

Software Engineer (Remote) · concurrent with Interactive Cares Tech Lead

- Integrated AI assistant chatbot and analytics dashboard; improved marketing campaign ROI by **25%**.

Survey of Bangladesh, Ministry of Defence

Sept 2022 – Aug 2023

Data Engineer (Part-time)

- NSDI data automation pipeline: reduced manual processing **80%**, saving 2,400+ person-hours/year across 43 government departments. Geospatial validation processing 50GB+/month.

Interactive Cares

June 2021 – August 2022

Backend Developer

- Core platform backend; supported early-stage growth to 8K users.

PROJECTS & OPEN SOURCE CONTRIBUTIONS

MIRA AI — Conversational Sales Agent

June 2025 – Present

Founder, CEO & Lead Architect · NVIDIA Inception Program (2025)

- Multi-channel conversational sales AI on LangGraph, FastAPI, and RAG over 10K+ products; 4 paying enterprise customers, scaled to **100K users**.

wis2downloader — World Meteorological Organization

Mar 2025 – Sept 2025

Open Source Contributor

- Refactored monolithic architecture to distributed Celery; reduced ingestion latency from 4 hours to **130ms**; adopted by national meteorological agency.

EDUCATION

Erasmus Mundus MSc — Geoinformatics & AI (GEM)

Sep 2026 – 2028

Bangladesh NST Fellowship (2026) · Fully funded

Bangladesh University of Engineering and Technology (BUET)

April 2018 – September 2023

B.Sc. Computer Science and Engineering · GRE: 329 (Q170, V159) · IELTS: 8.0

SELECTED PUBLICATIONS & RECOGNITION

Publications:

- **Munim, M. T. H.** (2025). “Breaking the Statistical Similarity Trap in Extreme Convection Detection.” *arXiv:2509.09195*.
- **Munim, M. T. H.**, et al. (v1 draft). “August 2024 Bangladesh Flood Analysis.” *Targeting GRL/NHESS*; with SPARRSO collaborators.
- Eliza, I. J., et al. (2024). “eDakterBari.” *Heliyon*, 10(1), e23308.

Invited Talks: “Climate–Agriculture Risk Modeling: Sri Lanka,” South Asian Hydromet Forum, Malé, Apr 2026 | “SCDR for Agrometeorology,” National Center of Meteorology, UAE, 2025.

Awards: Bangladesh National Science and Technology Fellowship (2026) | NVIDIA Inception (2025) | Accelerating Asia Winner (2023, Top 9 of 500+, \$100K) | Champion, Bangladesh Mathematical Olympiad (2016, IMO shortlist).