

# Sunzil Khandaker

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## SUMMARY

AI Researcher and Engineer with a **CGPA of 3.97/4.0** from Daffodil International University (top-5 in Bangladesh). Author of **7 research outputs**—2 published in Q1 journals (Elsevier), 2 under review in Q1 venues (Elsevier, Springer Nature), and 3 IEEE publications—covering deep learning, XAI, LLM engineering, and IoT. Hands-on expertise in building end-to-end AI pipelines: from LLM fine-tuning and RAG architectures to production-level automation with n8n and FastAPI. Native Bengali speaker with advanced English, uniquely positioned for multilingual NLP and local AI product development.

## TECHNICAL SKILLS

<b>AI &amp; Deep Learning</b>	PyTorch, TensorFlow, Hugging Face Transformers, Scikit-learn, XGBoost, CNN, ViT, LLM Fine-tuning (SFT/PEFT/LoRA)
<b>LLM &amp; RAG Engineering</b>	LangChain, RAG Architectures, Prompt Engineering, ChromaDB, Pinecone, Vector Embeddings, Bias & Safety Evaluation
<b>Explainability (XAI)</b>	SHAP, LIME, GradCAM, INT8 Quantization Analysis, Diagnostic Evaluation Frameworks
<b>Automation &amp; APIs</b>	n8n (production), FastAPI, REST APIs, AWS (basics)
<b>Data &amp; Languages</b>	Python (Advanced), SQL, R, Pandas, NumPy, Matplotlib, Seaborn, Power BI (basic), Git, Jupyter
<b>Linguistics</b>	Bengali (Native), English (Advanced — C1 level)

## AI RESEARCH & ENGINEERING EXPERIENCE

**Machine Learning Researcher** | NanoBio Tech Center, Daffodil International University

*Jan 2025 – Present*

- Designed and executed XAI-based diagnostic evaluation frameworks to measure model accuracy, detect hidden biases, and identify performance plateaus in deep learning pipelines; findings directly informed retraining strategies.
- Curated and published the **BDHerbalPlants** image dataset (Elsevier *Data in Brief*): applied advanced data-wrangling across multi-source inputs, enforcing strict annotation consistency and quality standards.
- Developed automated Python scripts to surface and visualize failure patterns in model outputs, cutting manual review overhead and providing statistically grounded evidence for iterative model improvement.

**Jr. AI Developer** | Joint Venture AI, Betopia Group (Remote)

*Apr 2026 – Present*



- Build and optimize text-processing pipelines that transform raw multi-source documents into high-quality training sets for LLMs and RAG systems.
- Evaluate human-annotated data for consistency, helpfulness, safety, and alignment across large-scale text corpora; report actionable quality metrics to senior researchers.
- Collaborate with international teams to benchmark generative AI performance and deliver structured improvement recommendations.

**Teaching Assistant (AI Bootcamp)** | Ostad

*May 2026 – Present*

- Provide technical instruction for large-cohort learners in *AI Engineering Bootcamp* and *Master AI Automation & Build AI Agents* programmes.
- Conduct hands-on workshops on LLM orchestration, RAG pipelines, no-code AI automation (n8n), and data engineering; troubleshoot complex coding challenges for learners transitioning into AI roles.

## SELECTED PROJECTS

- BanglaRAG: Multilingual LLM Assistant for University LMS** 
  - Engineered Python pipelines to ingest and chunk complex academic PDFs into optimized text embeddings for local LLM retrieval (ChromaDB + LangChain).
  - Designed bilingual evaluation protocols testing factual accuracy, safety, and cultural appropriateness in both English and Bengali; published as *IEEE QPAIN-2026*.
- Team Murikha: AI-Powered Full-Stack Web Application** 
  - Developed a collaborative full-stack web application using Next.js (App Router), Drizzle ORM, and a component-driven

UI architecture.

– Integrated server-side API routes and real-time context management; contributed as a core developer in a multi-person team.

• **Quant-XAI: Quantization Impact Analysis on Explainability**

[\[Preprint Available\]](#)

– Designed a novel framework to quantify and mitigate explainability drift introduced by INT8 quantization in edge-deployed visual classification models; submitted to *Scientific Reports*, Springer Nature (Q1).

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## PUBLICATIONS

- **Khandaker, S.**, et al. “Transparent Deep Learning for Medicinal Plant Recognition: A Hybrid CNN–ViT Approach.” *Smart Agriculture Technology*, **Elsevier** (Q1, **Published**). [\[Link\]](#)
- **Khandaker, S.**, Rahman, M. “BDHerbalPlants: Augmented and Curated Herbal Plants Image Dataset.” *Data in Brief*, **Elsevier** (**Published**). [\[Link\]](#)
- **Khandaker, S.**, et al. “A Coverage-Preserving Ensemble Framework with Minority Recovery for Robust Indoor Localization.” *International Journal of Activity and Behavior Computing*, **IEEE** (**Published**). [\[Link\]](#)
- **Khandaker, S.**, et al. “SolarLoRa: A Low-Cost IoT System for Soil Health Monitoring.” *IEEE ICCIT-2025* (**Published**). [\[Link\]](#)
- **Khandaker, S.**, et al. “BanglaRAG: Building a Multilingual Knowledge Backbone for LMS.” *IEEE QPAIN-2026* (**Published**).
- **Khandaker, S.** “Quant-XAI: Quantifying and Mitigating Explainability Drift Under INT8 Quantization in Edge-Deployed Visual Classification.” *Scientific Reports*, **Springer Nature** (Q1, *Under Review*).
- **Khandaker, S.** “TurmericNet: An Explainable Hybrid Attention Network for Efficient Edge-Based Plant Disease Diagnosis.” *Computers and Electronics in Agriculture*, **Elsevier** (Q1, *Under Review*).

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## EDUCATION

**Daffodil International University (DIU)** — Top-5 University in Bangladesh

B.Sc. in Computer Science & Engineering

Focus: Data Science, Computer Vision, Deep Learning

2022 – 2025

**CGPA: 3.97 / 4.00**

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## CERTIFICATIONS

**[Neural Networks and Deep Learning]** — Coursera

[\[Verify\]](#)