

S. M. NAVIN NAYER ANIK

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RESEARCH INTERESTS

Computer Vision, Generative Models (Optimal Transport Theory, GANs), Deep Learning, and Autonomous Robotics. Passionate about developing novel machine learning architectures to solve complex challenges in image analysis and synthetic data generation.

EDUCATION

B.Sc. in Computer Science and Engineering (CSE), BRAC University 2023

GPA: 3.82

Relevant Coursework: Machine Learning, Deep Learning, Linear Algebra, Advanced Algorithms

PUBLICATIONS & MANUSCRIPTS

Under Review

- **S. M. Navin Nayer Anik.** "Cross-Domain Intelligent Fault Diagnosis with Superlet Spectrograms and a Parameter-Efficient CNN-Transformer Hybrid." *Submitted for publication*, 2026.

In Preparation

- **S. M. Navin Nayer Anik.** "From Acoustic Signals to Visual Patterns: Advancing Anomalous Sound Detection Using Self-Supervised Vision Transformers." *Manuscript in preparation*, 2026.
- **S. M. Navin Nayer Anik.** "Robust Antimicrobial Resistance Prediction via MSFormer." *Manuscript in preparation*, 2026.

Theses & Published Works

- **S. M. Navin Nayer Anik.** "Optimal Transport Theory based GAN for Medical Image Augmentation and Classification." *B.Sc. Thesis - BRAC University*, 2023.

ACADEMIC & RESEARCH EXPERIENCE

Undergraduate Thesis Researcher 2023

- **Thesis:** Optimal Transport Theory based GAN for Medical Image Augmentation and Classification.
- Formulated and built a novel Generative Adversarial Network utilizing Optimal Transport Theory to model complex data distributions.
- Generated highly realistic synthetic datasets using TensorFlow to augment limited medical imaging data, quantitatively improving the accuracy and robustness of downstream classification models.

Machine Vision Researcher Anusondhani Lab January 2020 - May 2023

- Designed and deployed state-of-the-art CNN and Transformer-based architectures for complex image and video analysis.
- Engineered rigorous data preprocessing, augmentation, and annotation pipelines to eliminate bias and improve model robustness.
- Evaluated model architectures against quantitative metrics, formally documenting experimental results and collaborating with senior researchers to translate algorithmic concepts into deployable vision solutions.

BRACU DUBURI (Autonomous Underwater Vehicle) 2021 - 2023

- Developed a transfer-learning-based object detection algorithm for Bangladesh's first AUV.
- Optimized deep learning models for edge deployment constraints on Jetson Nano hardware.

PROFESSIONAL EXPERIENCE

Software Engineer I, AI/ML Cefalo Bangladesh Ltd December 2025 - Present

- **BioDrone Platform:** Developing and integrating deep learning models (CNNs and Transformers) for complex aerial image analysis in forestry and agriculture.
- Engineering scalable, distributed training pipelines to handle massive geospatial datasets using AWS.

Associate Software Engineer II, AI/ML Cefalo Bangladesh Ltd July 2025 - December 2025

- **Generative AI & Forecasting:** Contributed to "TicketCo" automated pricing engine using time-series forecasting, and "Dobee" generative storytelling system using Vertex AI and LangChain.
- Formulated end-to-end data pipelines for dynamic, context-aware AI content generation and real-time data streaming.

Associate Software Engineer I, AI/ML Cefalo Bangladesh Ltd February 2024 - July 2025

- **Aqua Robotics:** Developed robust image classification models for underwater robotics, successfully resolving critical overfitting and bias challenges.
- Designed a GAN-based synthetic data generation pipeline that significantly improved model generalization on out-of-distribution samples.
- Optimized distributed training architectures, effectively reducing computational training costs by 70%.

TEACHING EXPERIENCE

Undergraduate Teaching Assistant BRAC University January 2022 - December 2023

- Evaluated assignments, exams, and projects for core computer science coursework.
- Provided extensive one-on-one tutoring to students, clarifying complex mathematical and algorithmic concepts in machine learning and computer science.

AWARDS & EXTRA-CURRICULAR ACTIVITIES

- Outstanding Rookie Team & Top 10 Semifinalist, RoboSub International AUV Competition, USA (2022).
- Top Five Industrial Projects, Conference on 4th IR (2021).
- Highest Academic Distinction & Vice Chancellor's/Dean's List (5 times).
- Former Sub-Team Lead, BRACU DUBURI Robotics Team.

TECHNICAL SKILLS

Languages	Python, C++, Java, SQL
ML & AI	PyTorch, TensorFlow, Scikit-learn, CNNs, Transformers, GANs, Computer Vision
GenAI	LangChain, Vertex AI, RAG, Prompt Engineering
MLOps & Cloud	AWS (S3, SageMaker), Docker, Distributed Training
Data & Tools	BigQuery, Linux, Shell, Git