Samin Yeasar

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Research Interests

- Computer Vision
- Vision-Language Model
- Natural Language Processing
- Deep Learning

Experience

Software Engineer — *Dhaka, Bangladesh*
CodeMarshal IT Systems — *February 2024 – Present*

- Contributed to R&D of a **zero-shot visual inspection engine** using open-vocabulary detectors (**Grounding DINO**) and vision-language models (**CLIP**, **Moondream2**) to automate visibility auditing.
- Developed a Bangla **real-time ALPR system**; improved vehicle-class OCR accuracy by **10.17%** through OCR input optimization.
- Built and deployed a production-grade **surveillance management platform** with **face recognition**, and **video forensics**; engineered a chunked video processing pipeline with real-time event delivery via a singleton **Socket.IO** instance.

Education

Khulna University of Engineering & Technology — *March 2016 – July 2023*
BS in Computer Science and Engineering

- GPA: 3.24/4.0 (**Average CGPA of Last 4 Semesters: 3.54**)
- **Thesis:** *A Novel DNA-based Cryptosystem for Text and Audio Data*

Publications

Bidirectional xLSTM with a Kolmogorov–Arnold Emission Head for Bangla Named Entity Recognition — *Under Review, ICCIT 2026*

- **S. Yeasar**, et al. *Proposed a BanglaBERT → bidirectional xLSTM → CRF architecture with a Kolmogorov–Arnold Network (KAN) emission head — the first application of xLSTM to Bangla NER.*
- Attained **85.30 ± 0.06** entity-level macro F1 on BanNERD, outperforming BiLSTM–CRF (84.81 ± 0.05) and CRF (84.22 ± 0.48) baselines; 54-run ablation reveals a capacity–data trade-off on the low-resource ANCHOLIK-NER benchmark.

Climate Crisis and Food Security in Bangladesh: Utilizing Machine Learning in Geospatial Environment to Investigate Drought Tolerance of Major Crops — *Preprint, 2024*

- R. R. Rudra, **S. Yeasar**, T. A. Noor, et al. *Applied Random Forest and SHAP analysis to evaluate drought tolerance of five major Bangladeshi crops using 16 climatic and geographic variables.*
- DOI: 10.2139/ssrn.4974356 *(SSRN preprint)*

Capturing Rainfall Dynamics: The Efficacy of ARIMA Models in Environmental Forecasting *ICACE 2024*

- L. C. Roy, S. K. Das, **M. S. Yeasar**, et al. *Developed an ARIMA(2,1,2)-based rainfall forecasting model using 40+ years of meteorological data from 30 stations across Bangladesh.*
- 7th International Conference on Advances in Civil Engineering, CUET, Bangladesh. [ResearchGate]

Projects

OpenDub: English-to-Bangla Video Dubbing Pipeline github.com/y3454r/opendub

- End-to-end CLI dubbing pipeline across 8 stages using **NLLB-200** (translation), **MMS-TTS-ben** (TTS), **Demucs** (source separation), and **WORLD vocoder** (prosody transfer) with **isochrony-aware** duration matching.
- **Tools Used:** PyTorch, HuggingFace Transformers, Whisper, librosa, ffmpeg

VSP-MVP: Virtual Simulated Patient Chatbot github.com/Y3454R/vsp-mvp

- Full-stack mental health training platform implementing the **CureFun research methodology**; uses **LangChain** and **GPT-4o-mini** for patient simulation and automated evaluation of 8 clinical competencies.
- **Tools Used:** FastAPI, Next.js 14, LangChain, PostgreSQL, Docker

Envertor: Environment Variable Management CLI github.com/y3454r/envertor

- Published a **PyPI package** for **.env** management and safe template generation across Python and JS/TS codebases with basic secret protection.
- **Tools Used:** Python, Regex, Click

Technical Skills

Languages: Python, JavaScript, C++

Frameworks: Pytorch, FastAPI, Next.js, Express.js

Tools: Git, Docker, Jenkins

Database: PostgreSQL, Redis

Competitive Programming

- **Intra KUET Programming Contest 2020** — Placed **30th**

Extracurricular Activities

- **Vice-President**, Musical Association of KUET