Debarghya Saha

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Professional Experience

AI Intern
Ethical Den (Hivyr.ai)

July 2025 – Present
Onsite

- Led development of a real-time multilingual conversational AI agent integrating Speech-to-Text, LLMs (Gemma3n:E4B), sentiment detection, and Text-to-Speech systems
- Implemented FastSpeech2-based Bengali TTS pipeline in PyTorch with Epitran-generated IPA phoneme sequences, reducing model training time by 32%
- Enhanced prosody and emotion modeling with pitch, energy, and duration embeddings, improving speech expressiveness
- Integrated SNAC vocoder for natural-sounding audio synthesis with minimal artifacts
- Directed cross-functional team on model architecture design, training optimization, and deployment strategies
- Developed an Apache Beam-based automated pipeline to curate datasets of 24kHz voice samples, English texts, and IPA sequences, improving efficiency and scalability of TTS training data preparation with Speech Synthesis Markup Language(SSML)

Android Developer (Freelance)
Self-employed

June 2025 – July 2025
Remote

- Architected custom widget library with Provider state management; decreased UI bugs by 70% through component abstraction and testing
- Optimized app performance by reducing cold start time 50% via advanced asset caching, lazy-loading, and memory management
- Accelerated development velocity by 40% through modular UI components, reusable patterns, and automated deployment pipelines

Technical Projects

Advanced Reinforcement Learning Agent for Pokemon Red Custom Environment
GitHub

- Built custom OpenAI Gym environment using ROM disassembly and memory mapping to emulate Pokemon battle logic and states
- Implemented PPO and A2C agents with Generalized Advantage Estimation and reward shaping, achieving 82% win rate and higher evolution probability
- Improved training efficiency by 35% via refined action space, tuned reward function, and optimized experience replay
- Developed automated emulator interaction and state logging using Python scripting and reverse engineering

Technical Skills

Languages: Python, C++, TypeScript, Dart
ML/AI: PyTorch, TensorFlow, HuggingFace, LangChain, MLflow, Scikit-learn, NLP, CV, DL
Frameworks/Tools: FastAPI, Django, React, Flutter, Docker, Kubernetes, GitHub Actions, SB3, llama.cpp, PineconeDB, Milvus, Pandas, NumPy, Node.js
Cloud/DevOps: AWS,GCP, Linux, CI/CD, Redis, Apache Kafka, Prometheus, Grafana
Databases/Other: PostgreSQL, MongoDB, Vector DBs, REST APIs, System Design, Microservices, Prompt Engineering

Education

Meghnad Saha Institute of Technology
B.Tech in Computer Science and Business Systems

West Bengal, India
2022 – 2026

Sudhir Memorial Institute
CBSE – Senior Secondary

West Bengal, India
2020 – 2022

Calcutta Airport English High School
WBBSE – Secondary Education

West Bengal, India
2007 – 2020

Achievements and Awards

- **Smart India Hackathon 2024 Winner** – Led team to solve Ministry of Education Problem 1742; ranked top 0.3% among 88221+ teams with AI-powered educational solution
- **AI4Andhra Hackathon 2025 Finalist** – Advanced to finals in AI track; presented LLM-powered system for automated CCTNS query generation and processing
- **Smart India Hackathon 2023 Internal Winner** – Secured first place at institutional level with disaster management simulation app