

Somasree Majumder

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EXPERIENCE

Full Stack Machine Learning Engineer

March 2025 – Present

Hyderabad, India

DeepEdge

- Developed **end-to-end anti-UAV quadcopter tracking system** for runaway detection under challenging **infrared conditions**, delivering critical defense capabilities.
- Built advanced tracking models using **YOLOv8** with sophisticated object tracking algorithms including **linear and non linear Kalman filters, and infrared thermal optimization** for enhanced performance
- Enhanced the performance over 50% over yolov8s by introducing motion queues masks
- Managed 2-3 simultaneous client projects while maintaining high service quality and meeting all project deadlines. Researched and implemented findings from industry research papers like **ERFE** to achieve measurable performance improvements
- Introduced a new technique **MOG2 Background Subtraction +Morphological Cleaning → Contour Detection +Size/Shape Filtering +SVM Classification of Motion Candidates** which achieved 30% performance gains over yolov8
- Implemented cutting-edge point tracking algorithms including **Lucas-Kanade tracking and TAPNet by GoogleDeepmind, CoTracker by Facebook** for precise tracking of point-like objects in complex environments

Machine Learning Engineer and Developer

July 2023 – March 2025

Hyderabad, India

Deloitte

- Architected and deployed **multilingual RAG pipeline** with **FAISS vector database management, FastAPI endpoints, and Docker containerization** for scalable AI solutions
- Engineered **Django-based movie recommendation system** utilizing advanced algorithms including **content-based filtering, FunkSVD, and popularity-based recommenders** for personalized user experiences
- Developed high-performance **predictive model for customer purchase likelihood** achieving **90% accuracy** through sophisticated feature engineering and ML techniques

Machine Learning Developer

Feb 2023 – May 2023

Remote

Unify.ai (Freelance)

- Implemented robust functions across **TensorFlow, JAX, NumPy, PyTorch, and PaddlePaddle** frameworks, **increasing code coverage by 10%** and enhancing system reliability
- Led comprehensive **unit testing with Hypothesis framework** and managed **array-api-test suite** achieving **80% test coverage** for production-ready code
- Developed sophisticated **Ivy OpConverters for TensorRT backend** and **mentored contributors** through complex large-scale codebase navigation

PROJECTS

AI Agent Flight Scanner | *Groq, Ollama, DeepSeek-R1, LangChain, SQLite, ChromaDB, FastAPI*

2024

- Built **intelligent flight data analysis system** using advanced **RAG architecture** with **DeepSeek-R1-Distill-LLama-70B** and **LLama 3.2:3B models** for comprehensive flight analytics [\[GitHub\]](#)

Amazon Product Classification | *PyTorch, Deep Learning, Machine Learning, ALBERT*

2023

- Engineered sophisticated **feature engineering and preprocessing pipeline** improving model **accuracy by 10%** using **synthetic PyTorch datasets** and **ALBERT transformer** for advanced multiclass classification [\[GitHub\]](#)

Django Food Delivery Platform | *Django REST Framework, SQLite, JWT*

2023

- Architected comprehensive **full-stack food delivery platform** featuring **vendor management system, proximity-based search, payment integration, dynamic menu management, automated tax calculations, real-time order tracking, and notification system** [\[GitHub\]](#)

ChildMind Anxiety Prediction | *TensorFlow, Gated RNNs, Deep Learning*

2023

- Developed innovative **predictive healthcare model** using **Gated RNNs** to analyze children's physical activity patterns for **early detection of problematic internet use**, contributing to child mental health research [\[GitHub\]](#)

Custom Vector Database | *Python, HNSW Graphs*

2024

- Built high-performance **lightweight vector database** using **Hierarchical Navigable Small World (HNSW) graphs** for **efficient similarity search** and retrieval operations [\[GitHub\]](#)

PUBLICATIONS & ACHIEVEMENTS

Challang Hackathon: Top 10 finalist among 100 elite teams shortlisted worldwide (2 participants per team) - demonstrating exceptional problem-solving capabilities on global stage

Research Publications: Published peer-reviewed papers in **IEMATICS 2020** (Homomorphic Encryption) [\[Paper\]](#) and **SPECTRUM 2020** (ML in Medicine) [\[Paper\]](#) - contributing to cutting-edge research

Competitive Programming Excellence: Ranked 18/2500 in HackerEarth ML Challenge, 12/1000+ in Cipla competition, 1.6k globally in Google Code Jam for Women [\[Certificate 1\]](#) [\[Certificate 2\]](#)

Open Source Leadership: Active contributor to major ML frameworks including **PyTorch Lightning**, **Hugging Face Transformers**, **KerasCV**, **KerasNLP** - recognized for high-quality contributions to global developer community [\[Profile\]](#)

Elite Recognition Programs: **LiFT Scholar 2022** (Top 500 worldwide), **GHC OSD'23 Mentor** for OpenSSF project - selected for leadership potential and technical expertise [\[Details\]](#)

TECHNICAL SKILLS

Programming Languages: Python (Advanced), JavaScript, TypeScript (Proficient), HTML5, CSS3

AI/ML Frameworks: TensorFlow, PyTorch, JAX, Hugging Face Transformers, NumPy, PaddlePaddle, Scikit-learn, Keras

Backend & APIs: FastAPI, Django REST Framework, Pydantic, LangChain, Microservices Architecture

Vector & Databases: FAISS, ChromaDB, Pinecone, MySQL, MongoDB, SQLite, PostgreSQL, Redis

DevOps & Cloud: Docker, Kubernetes, Git, CI/CD Pipelines, AWS, REST/GraphQL APIs MongoDB, SQLite, PostgreSQL, Redis

GenAI Langchain,LangGraph

Problem Solving: Data Structures & Algorithms - [LeetCode Profile](#) with competitive programming expertise

EDUCATION

Institute of Engineering & Management

Bachelor of Technology in Electronics and Communication Engineering

Aug. 2019 – May 2023

8.94 CGPA