Debapriya Das

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Summary

AI/ML enthusiast with industrial experience in generative AI, backend development, DevOps and agentic AI development for **2+ years**. Passionate about building scalable systems, exploring intelligent solutions, and working with impactful technologies.

Experience

Senior AI Engineer (Full-Time), Kvell Dynamics, Remote, South Africa — Oct 2024 – present

RMB — Rand Merchant Bank (Project Lead)

- Leading the development and DevOps team of 10+ members.
- Creating GCP cloud architectures for efficient CI/CD pipelines.

Fungi — Smart Utility Management Platform (Project Lead)

- Architected and developed a large-scale **FastAPI** backend with 60+ REST API routers for managing sites, meters, customers, billing, tariffs, and anomaly detection
- Designed **PostgreSQL** data layer using **SQLModel/SQLAlchemy** with **Alembic** migrations and optimized connection pooling
- Built billing rule execution engine, tariff calculation system (block rate, time-of-use, demand charge), and payment processing integration
- Implemented **Redis** caching, **RabbitMQ** background job processing, and event-driven architecture using FastStream
- Built headend ingestion layer for 4 meter systems (M2M, Landis & Gyr, Sigfox, Scigrow) with async batch processing, delta calculation, and device-type routing (electricity, water, gas)
- Led data migration from legacy system to new platform — PostgreSQL-to-PostgreSQL normalization and PostgreSQL-to-**InfluxDB** time-series migration with validation pipelines
- Developed **AWS Lambda** functions, **Cognito** auth flows, and **SES** email services using **boto3**; implemented JWT + **Casbin** RBAC, **Docker** containerization, and CI/CD pipelines

Murphy's Law AI — Legal AI (early phase, ∼1 month)

- Built conversational AI interface using **Chainlit**, integrated **LLM** APIs, and developed file upload feature
- Implemented **RAG** pipeline and ETL using **Weaviate** vector database and **Langchain**

Hackathon Intern, ANNAM.AI, Rupnagar, Punjab, India — May 2025 – Jul 2025

- Participated in a hackathon-based internship organized by ANNAM.AI, an AI CoE of the Ministry of Education, Govt. of India
- Developed AI solutions for real-time challenges in Indian agriculture under mentorship from domain experts

Freelance

Full Stack Engineer (Freelance), Nearhouse, Santiniketan, India — Sept 2022 – Jun 2024

- Developed backend APIs with **Express.js** from scratch. Live: nearhouse.in
- Database: **MongoDB**. Implemented **CI/CD** pipeline for automated deployment from **GitHub** to AWS EC2 using GitHub Actions

Backend Engineer (Freelance), Lazer, Remote, India — Dec 2021 – Dec 2022

- Created **REST APIs** using **Express.js**, used **MongoDB** for data storage, managed **AWS CI/CD** pipeline

Education

IIT Ropar, Major in Artificial Intelligence — 2024 – 2025

- **Coursework:** Python, Artificial Intelligence, Prompt Engineering, NumPy, Pandas

Visva-Bharati University, M.Sc. in Computer Science — 2022 – 2024

- CGPA: 7.75/10.0
- **Coursework: Advanced Machine Learning**, **Image Processing**, Data Mining, Distributed Systems, Parallel Algorithms, Approximation Algorithms, Advanced Software Engineering, Quantum Computation

Visva-Bharati University, B.Sc. in Computer Science 2019 – 2022

- CGPA: 7.85/10.0
- **Coursework:** C Programming, Computer Architecture, Data Structures & Algorithms, Operating Systems, DBMS, Theory of Computation, Numerical Methods, **Artificial Intelligence**, **Soft Computing**, Computer Networks, Computer Graphics, Linux Programming

Skills

Languages: **Python**, **JavaScript**, **Node.js**, C, C++, CSS, HTML, Java

Technologies: AWS, **MySQL**, MongoDB, **PostgreSQL**, **REST API**, OpenCV, **NumPy**, **Scikit-Learn**, **Matplotlib**, **NLTK**, **GitHub**, **Pandas**, DevOps, Docker, Langchain, Redis, InfluxDB, Weaviate

Frameworks: **Pytorch**, TensorFlow, React.js, **Express.js**, **FastAPI**, Streamlit, Chainlit

Research

Generation of *de novo* Molecular Structures using Graph-based Variational Autoencoder, DCSS, Siksha Bhavana, VBU, India Mar 2023 – Jun 2024

Developed a **generative AI** model from scratch for producing novel molecular structures from graph inputs using **GNNs** and **VAEs**. [Full Report]

- Developed a **novel Graph-VAE architecture** with edge-informed graph convolutions
- Introduced a quadratic **(**$O(n^2)$**)** complexity reconstruction loss, replacing quartic ($O(n^4)$) complexity
- Preprocessed and fine-tuned on **ESOL** & **TOX21** datasets. Enhanced chemical validity from **32% to nearly 98%**

Tools: **Python**, **Pytorch**, **DGL**, **DGLlife**, **RDKit**, **NumPy**, **Pandas**

Projects

Nyaya-GPT – A RAG+ReAct based framework (NLP) Sept 2024

- RAG framework on Indian Constitution and BNS powered by a ReAct loop. [Demo] [GitHub]
- Tools: **Python**, **Groq**, **Streamlit**, **llama3.1-70b**, **Langchain**

The Tech Buddy – A customized chatbot (NLP) Sept 2024

- End-to-end personalised AI chatbot. [Demo] [GitHub] [Blog]
- Tools: **Python**, **Groq**, **Streamlit**, **llama-3.1**

Custom Zebra Fish Detection – YOLOv5 (Computer Vision) Jun 2023

- Extracted frames using **OpenCV**, labeled dataset, fine-tuned **YOLOv5**. [Demo]

Publications & Articles

A study on erratic mental status in a young human population in respect to mate choice Dec 2023

sciforum.net/paper/view/16541

Exploring Word Embedding Techniques Based on Count or Frequency: A Practical Guide Jul 2024

Published on LinkedIn. Covers One-Hot Encoding, Bag of Words, and TF-IDF techniques for NLP.

Exploring Text Preprocessing Techniques in Natural Language Processing Jul 2024

Published on LinkedIn. Covers foundational text preprocessing techniques essential for NLP tasks.

Certifications

Introduction to Machine Learning 2021 | Duke University, USA

Covered logistic regression, MLPs, CNNs, and NLP with hands-on PyTorch exercises.

Applications of Python in Big Data, NLP, and Social Network Analysis 2020 | IEEE Kolkata chapter

Hands-on workshop on Python applications in Big Data, NLP, and SNA.