

AMIT KUMAR

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Education

Indian Institute of Technology, Delhi

Master of Technology in Engineering Analysis and Design

August 2020 – May 2022

CGPA(8.98/10)

Guru Ghasidas Central University, Chhattisgarh

Bachelor of Technology in Mechanical Engineering

August 2015 – May 2019

CGPA(8.03/10)

Experience

HCLTech | *Technical Lead (AI)*

August 2022 – Present

- Developed a RAG-based code search tool that embeds around 8 GB of C/C++ code data (146 million lines of code). This tool combines semantic and BM25 search capabilities, utilizing an open-source embedding model from JinaAI.
- Optimized LLMs prompt to reduce hallucination and improve accuracy, ensuring consistent output format and enhancing documentation quality through refined context relevance and clarity.
- Led the development of a Generative AI-based tool, creating comprehensive C++ documentation using Python-Flask and LLMs (GPT-35, LLAMA2, Vertex AI) while employing MkDocs for structured presentation and formed dynamic and optimized prompts.
- Worked on a Python-based interface for manipulating and fetching cloud log data using FastAPI, SQLAlchemy and PostgreSQL, implementing features for filtering logs, aggregating data, and visualizing results.
- POC: Worked on optimizing cloud costs by implementing recommendations derived from forecasting and pattern-based detection methods through retrieving log matrices from Azure and GCP.

Projects

ASL Alphabet Recognition System | *CNN, PyTorch, Python*

🌐 ASL-Recognition

- Developed a PyTorch-based CNN model to classify 27,000 American Sign Language alphabet images, utilizing Lexset's Seahaven synthetic dataset.
- Compared the training loss with different optimization methods such as RMSProp, SGD, and ADAM.

Simulation through PINN | *Deep Learning, PyTorch*

March 2022

- A mixed variable Physics-informed neural network (PINN) method utilizing PyTorch and Python, employing ADAM optimizer for bias and weights optimization with Tanh activation function.
- Validated using OpenFOAM simulation data of flow velocity over a circular cylinder.

Technical Skills

- **Languages:** Python, SQL, JavaScript, C++, MATLAB
- **Technologies:** Data Structure and Algorithms, OOPs, Cloud, RegEx, Relational & Graph Database
- **Tools:** Flask, Django, LangChain, Docker, Jenkins, PostgreSQL, ChromaDB, pytest, Neo4j
- **AI:** Machine Learning, Deep Learning, Generative-AI (LLMs), Statistics, Linear Algebra, Calculus

Courses and Certifications

- **Deep Learning Specialization** | *Coursera.org & DeepLearning.AI* Present
- **Azure AI Engineer Associate (AI-102)** | *Microsoft (link)* November 2023
- **Azure Fundamentals (AZ-900)** | *Microsoft (link)* March 2023
- **Deep Learning in Mechanics (APL-745)** | *IIT Delhi semester course* March 2022

Recognitions

- **Innovation Champions Award** | *HCLTech* October 2023
- **Prof. R. K. Mittal Excellence Cash Award** | *IIT Delhi* November 2022