

Aarush Gupta

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SUMMARY

Seasoned R&D Engineer with over 2.5 years of full-time experience in software engineering, machine learning, and artificial intelligence. Proven ability to develop algorithms and software solutions that enhance user experience and operational performance. Skilled in designing and deploying ML/DL models, integrating backend services, and managing databases. Seeking to leverage expertise in research, software engineering, and AI on challenging, growth-oriented projects within a forward-thinking organization.

EXPERIENCE

Amelia AI

Research and Development Engineer

Amelia Answers: Question Answering with Advanced RAG

Bengaluru, India

Jul, 2022 – Present

- Contributed to the development of **Amelia Answers**, resulting in a **10%** increase in Net Promoter Score (NPS) by enhancing user query processing through **Advanced RAG pipelines** and **Langchain** integration.
- Extracted and processed data from diverse sources such as **URLs**, **PDFs**, **HTML**, **Sitemaps**, and **FAQs** using **Azure OpenAI** and **All-mpnet** for semantic representations. Utilized **Llama-3-70B LLM models** for generating accurate responses, and implemented **Weaviate** for efficient document embeddings alongside a **Hybrid Reranker Retriever** for optimized information retrieval.
- Designed and developed a comprehensive **QA Tester framework** with integrated **feedback mechanisms** and robust **evaluation metrics**, enabling continuous improvement and ensuring the delivery of high-quality responses.
- Further improved **Amelia Answers** by integrating Advanced RAG with granular tagging for knowledge sources and user session profiles.
- Implemented **GenAI-powered summaries** within the Agent View, enabling agents to swiftly comprehend escalated conversations and generate resolutions through Amelia Answers RAG.

Amelia Builds Amelia

- Achieved a **40%** reduction in company **LLMs** expenditures by integrating internal models atop **Open Source Language Models (OSLMs)**, resulting in significant cost savings of over **\$1 million** annually. Recognized by senior management for contributions to cost reduction initiatives.
- Implemented enhanced **ABA (Amelia Builds Amelia)** to generate chat flow options using language models, achieving a **50%** reduction in workflow development time and saving an estimated **30%** of resources. Simplified the process with prompt-based input for versatile conversation structures and emulated the same with **Autogen** using **multiagent systems**.

Bulk Tester

- Led and fully developed the **Intent Tester Framework**, a bulk testing tool to evaluate trained model performance. Implemented **batching** to enhance efficiency and reduce latency, optimizing overall testing **throughput**.

IBM

Software Engineer Intern

Docker Image Optimization

Bengaluru, India

Jan, 2022 – Jun, 2022

- Orchestrated multiple **Dockerfiles** to reduce image sizes by over 30%, optimizing **containerized applications**. Enhanced **security**, **performance**, and **efficiency** by 40%, establishing a solid foundation for future **scalability** and **innovation**.

Boeing

Software Engineer Intern

BERT Feedback Optimization

Bengaluru, India

Jun, 2021 – Aug, 2021

- Developed and implemented a **Bidirectional Encoder Representations from Transformers (BERT)** model to extract key phrases from user feedback, achieving a **25%** increase in accuracy. Enhanced the airline's feedback system, reducing processing time by **20%** and improving actionable insights by **30%**.

Rooters (Leo)

Web Development Intern

Bus Booking Web Application

Bengaluru, India

Mar, 2020 – Jun, 2020

- Led the end-to-end development of the **Bus Booking Web App**, including both user and admin interfaces. Designed and implemented secured **REST APIs** for backend services, enabling functionalities such as trip searching, booking management, inventory control, and comprehensive user, client, and product management. Developed the **database schema** for optimal data handling and performance.
- Implemented **role-based access control** and secure **authentication/authorization** using **JSON Web Tokens (JWT)**. Utilized **ReactJS** for the front end and integrated **GCP APIs** for data scraping.

EDUCATION

RV College Of Engineering

B.E Computer Science and Engineering, Bengaluru

CGPA : 8.9

Jul, 2018 – Jul, 2022

TECHNICAL SKILLS

Languages : Python, Java, C/C++

Frameworks : Spring Boot, Django

Database : Mongo DB, SQL, Redis

ML Tasks : Question-Answering, Text-Summarization, Text Embeddings, Zero & Few Shot Classification, Intent Classification & Discovery, Ranking & Recommendation, Paraphrase/Rephrase, KeyPhrase Extraction

Libraries & Tools : PyTorch, TensorFlow, TorchServe, vllm, Transformers, Langchain

DevOps & Tools : Git, Docker, HaProxy, AWS

PROJECTS

Predictive Solid Waste Management

- Created an automated system for deploying waste collection vehicles based on **predictive analysis**. Used **polynomial regression** for forecasting, with **Tableau** for data visualization. Developed the backend with **Django**, and employed **SQL** for relational data storage and **MongoDB** for non-relational data.

Autonomous Tagging of Stack Overflow Questions

- Implemented a **classification system** to predict tags for Stack Overflow questions using a **One vs Rest Classifier**. Improved the efficiency of filtering questions by automating the tagging process.

AWARDS & ACHIEVEMENTS

- Comed-K Rank: 413** out of 95,400 applicants.
- Bishop Clemens Award:** Awarded by Carmel School.
- Qiskit India Challenge Rank: 24** out of 250+ teams.
- Code For Good:** JPMorgan Chase & Co. Finalist.
- SNAP Rank: 59** out of 80,000+ applicants.
- Data Structures and Algorithms using Python:** NPTEL National Topper.

EXTRA-CURRICULAR AND VOLUNTEERING ACTIVITIES

- Microsoft Learn Student Ambassador** - Microsoft 04/2021 - 06/2022
- Technical Content Creator** - Gyanada Foundation NGO 03/2021 - 04/2021
- Core Team** - Quantum Machine Learning, CIRQuIT RVCE 03/2021 - 06/2022