Abhijit Rajkumar

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PROJECTS

AI Mental Health Screening Platform   GitHub Link

- Developed a full-stack mental health screening application using **React (TypeScript)** frontend and **FastAPI (Python)** backend.

- Built AI-powered chatbot using **LangChain**, **ChatOpenAI**, and **Pydantic** to simulate realistic doctor-patient mental health assessments.

- Designed **MentalHealthRubric** scoring model that analyzes chat history and evaluates five psychological dimensions with JSON-based structured output.

- Implemented personalized questioning logic that dynamically adapts tone and query style based on user **age** and contextual information.

- Integrated MongoDB for persistent chat storage and result retrieval, with modular routers (`user_router`, `screening_router`) for scalability.

- Handled OpenAI communication securely with environment-based config and supported real-time inference via asynchronous chat interfaces.

AI-Powered URL QA Chatbot & Chrome Extension   GitHub Link

- Built a full-stack application allowing users to ask intelligent questions about any webpage through a **Chrome Extension** connected to a **FastAPI backend**.

- Implemented backend services for scraping webpage content using **BeautifulSoup**, generating embeddings with **HuggingFace Transformers**, and storing/querying vectors in **Qdrant**.

- Developed AI chatbot functionality that generates context-aware answers using vector similarity and language models.

- Logged user queries and AI responses to **MongoDB** using the `motor` async driver for auditability and analysis.

- Created a user-friendly Chrome Extension UI leveraging browser APIs to read the current tab's content and interact with the backend in real time.

- Designed and documented REST API endpoints: health check, URL processing, Q&A, and collection deletion.

AI-Powered Interview Chatbot & Chrome Extension   GitHub Link

- Built an AI-based mock interview web app using **Streamlit**, **Python**, and **OpenAI GPT-3.5 API** to simulate real-time technical interviews.

- Integrated a dynamic candidate form capturing user details (name, email, resume, experience, etc.) with session-based interview flow.

- Engineered a multi-turn conversation flow using **Langchain** and prompt templates to deliver context-aware interview questions and feedback.

- Added guardrails like input validation, session persistence, and fallback responses to ensure resilience and smooth user experience.

- Implemented secure environment handling, logging, and scalable architecture for future enhancements like resume parsing and user authentication.

Work Experience

Pwskills   Jan 2022 - Nov 2023
Apprentice   *Bengaluru, Karnataka*

- **Lead the development** of machine learning solutions for EDA (Exploratory Data Analysis) Products, focusing on innovative and efficient algorithms.
- **Collaborate** with cross-functional teams, including data scientists and software developers, to integrate machine learning capabilities into EDA tools.
- Enhance **problem-solving skills** through active participation in troubleshooting and finding solutions to complex challenges.

AI / ML Intern   Jun 2021 - Aug 2021
Elite Techno Group   *Jaipur, Rajasthan*

- Developed and implemented a high-accuracy Breast Cancer Prediction Project, achieving a remarkable **classification accuracy of 99.45%**.
- **Engineered a modular project structure** with distinct components for data ingestion, transformation, model training, and prediction pipelines.
- Gained hands-on experience in **end-to-end machine learning workflow** development and optimization.

Technical Skills

- **Programming Languages:** Python, C, C++, R, JavaScript

- **Full-Stack Development:** HTML, CSS, JavaScript, React, FastAPI, Node.js, Express.js, REST APIs, Streamlit

- **Machine Learning & AI:** Supervised & Unsupervised Learning, Neural Networks, CNNs, Logistic Regression, KNN, Random Forest, Decision Trees, Clustering, Time Series Forecasting, OpenAI GPT, LangChain

- **Data Analysis & Visualization:** Pandas, NumPy, Matplotlib, Seaborn, Plotly, Jupyter Notebooks, Excel, Tableau, Power BI

- **Database Management:** MongoDB, MySQL, PostgreSQL, SQLite, Qdrant, motor (async)

- **Big Data Technologies:** Hadoop, MapReduce, PySpark, Apache Kafka, Hive, HDFS, AWS EMR

- **Cloud Platforms:** AWS (EC2, S3, Lambda, RDS, EMR), Google Cloud Platform (BigQuery, Cloud Storage), Azure (basics)

- **CI/CD & DevOps:** Git, GitHub Actions, Jenkins, Docker, Kubernetes (basics), Nginx, Postman, GitLab CI/CD

- **Tools & Libraries:** BeautifulSoup, HuggingFace Transformers, Pydantic, Chrome Extensions API, VS Code, PyCharm

Education

Gurucharan College   Silchar, Assam
Bachelor Of Science in Mathematics   *Jun 2013 – Jun 2017*

- Relevant Coursework: Calculus I and II,Linear Algebra, Multivariable Calculus, Abstract Algebra, Real Analysis, Number Theory, Mathematical Modeling, Complex Analysis, Topology, Mathematical Programming
- **C, Matlab**

Scholastic Achievements

- Successfully completed an MSc project focusing on **"Traffic Control Optimization using Linear Algebra,"** showcasing expertise in mathematical modeling and analysis. Actively working towards publication to contribute valuable insights to the field of traffic management and optimization.

- I have achieved a significant milestone in my academic journey during my MSc by successfully completing a **project focused on rainfall prediction using Time Series analysis**. This project not only demonstrated my proficiency in advanced statistical and mathematical techniques but also showcased my ability to apply these skills to real-world challenges. I am actively pursuing the opportunity to contribute to the academic community by seeking to publish the findings from this project, aiming to share valuable insights and contribute to the field of rainfall prediction.

CERTIFICATIONS

Data Science Masters Certification [View Certificate] Nov 2023

PW Skills

- Mastered end-to-end **Machine Learning** workflows, including supervised, unsupervised, and reinforcement learning.
- Hands-on **Deep Learning** projects using **TensorFlow**, **Keras**, and **PyTorch**.
- Strong foundation in **Linear Algebra**, **Calculus**, **Probability**, and **Statistics**.
- Applied **PCA**, **t-SNE**, and **LDA** for feature engineering and model optimization.
- Built models using **Random Forest**, **Logistic Regression**, **XGBoost**, **SVM**, etc.
- Domain projects in **healthcare**, **finance**, and **retail**.

Full Stack Developer Cohort (0 to 100) [View Certificate] July 2024

Instructor: Harkirat Singh

- Hands-on **MERN stack**, **DevOps**, and **System Design** training.
- Backend with **Node.js**, **Express**, **PostgreSQL**, **MongoDB**, **TypeScript**, **Zod**, **Prisma**.
- Frontend with **React**, **Next.js**, **Tailwind CSS**, **Recoil**, next-auth.
- DevOps: **Docker**, **CI/CD**, **Kubernetes**, **Nginx**, **Prometheus**, **Grafana**, **AWS**, **Fly.io**.
- Advanced topics: **Message Queues**, **Kafka**, **WebSockets**, **gRPC**, **Rate Limiting**, **Scaling**.
- Projects: **GSoC Issue Tracker**, **Paytm Wallet Clone**, **Zerodha Clone**, **Zapier Clone**.

Big Data Engineering Masters Certification [View Certificate] April 2025

Euron

- Strong foundation in **Big Data systems**, distributed computing, and 5Vs.
- Used **Hadoop**, **Spark**, **RDDs**, **DataFrames**, **Catalyst optimizer**.
- **Kafka** and **Spark Streaming** for real-time processing.
- Experience with **MongoDB**, **Cassandra**, and data modeling.
- Data orchestration with **Airflow** and **Azure Data Factory**.
- Cloud-based tools: **Azure (Data Lake, Databricks)**, **AWS (S3, EMR, Glue, Athena)**.
- Tool integration: **Kafka**, **Hive**, **Cassandra**, **MongoDB**, visualization with **Tableau/Power BI**.
- Projects: *Fraud Detection*, *Supply Chain Analytics*, *Sentiment Analysis*, *Customer Behavior*.