Abhishek Vardhan Narayanam

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Professional Summary

Innovative Python Developer with close to 3 years of experience in building and enhancing robust applications using Flask, Machine Learning, Deep learning, SQL, CICD development and Generative AI. Currently leading a team of three, I drive key projects like the Bank Statement Analyzer and a self-initiated in-house OCR solution, significantly reducing costs by eliminating third-party dependencies. Possesses deep knowledge of the financial domain coupled with excellent communication and collaboration skills.

Experience

- **Development Bank of Singapore** Hyderabad
  Analyst
  June 2022 - Present
  - **Bank statement Analysis (BSA) Application**: Designed, developed, and managed the Bank Statement Analyzer (BSA) web application. The application delivers financial insights by leveraging advanced data analysis and visualization tools, helping evaluate customers' financial capabilities. Played a key role in resolving bugs, incorporating user requirements, and implementing customized insights to enhance functionality. Deployed the application on OpenShift, ensuring its scalability and reliability. Regularly performed technical upgrades and collaborated with cross-functional teams to deliver a robust, user-friendly solution.
    Technologies used: Numpy, Pandas, Flask, SQL, Jenkins, Docker, OCP, Jenkins, Agile
  - **Interactive Dash Dashboard for BSA Application**: Developed a comprehensive Bank Statement Analysis (BSA) dashboard using Dash with advanced Plotly visualizations including interactive heat maps, time-series charts with anomaly detection. Implemented responsive filtering capabilities and custom financial metrics visualization, enabling analysts to quickly identify spending patterns and transaction anomalies.
    Technologies used : Plotly, Dash, Pandas, SQL, Dash , Bootstrap
  - **In-House OCR Solution**: Developed an in-house Python OCR solution to extract data from various bank statement templates, replacing an expensive third-party service. Achieved a significant accuracy improvement from 91% to 99% and enhanced response speed, making the system 3x faster. This led to a $300K reduction in annual renewal costs while improving processing efficiency.
    Technologies used: Py-tabula, Pymu-pdf, Pypdf2
  - **Testcase generator using Genai**: Developed and fine-tuned a Large Language Model (LLM) using LoRA and QLoRA techniques on Vertex API to automate the conversion of test instructions into BDD format. Custom prompts and example-driven training were used to enhance model accuracy. The model was quantized to improve processing speed. This solution reduced 80 man-hours by generating 500 automated test cases, significantly increasing testing efficiency.
    Technologies used: Langchain, Vertex ai, Few short templates, QLoRA

Skills Summary

Languages & Tools: Python, C++, Java, SQL, BASH, jenkins, Docker, GIT, PostgreSQL, MySQL
Frameworks & Libraries: Flask, Django, FAST api, DASH, Plotly, Streamlit, TensorFlow, PyTorch, Keras
Web Technologies: HTML, CSS, JavaScript, Bootstrap, Angular
Cloud Technologies: EC2, VPC, Lambda, Route 53, ECS, SNS, SQS, S3, Heroku, Openshift
Dev-ops tool: Git, Linux, Jenkins, Docker, CICD pipelines
ML Algorithams: Logistic Regression, Linear Regression, KNN, PCA, Random Forest, XG Boost
NLP tools: RNN, LSTM, Transformers, BERT, GPT
Gen AI tools: Lang-chain, Neo4j, Lang-graph, Advanced RAG, LLM Fine-Tuning (LoRA, PEFT),
Skills: Leadership, Stakeholder Management, Cross-functional Collaboration, Agile Methodologies, Teamwork

Publications

Parts of Speech Tagging using Viterbi algorithm **Read Publication**
Published in the International Journal of Scientific Research in Engineering and Management *May 2022*

Projects

Movie Recommendation System **GitHub Repo**
Developed a content-based movie recommender system deployed on AWS EC2 instance and configured Domain name using AWS Rote53. Used cosine similarity and Naive Bayes sentiment analysis to enhance recommendations from IMDB data on 4,000 movies. This project showcases skills in recommendation systems, machine learning, cloud deployment, and API data acquisition.
Technologies used: Cosine similarity, Pandas, NLP, EC2, Route53, Naïve Bayes, Flask

Database Query Chatbot
Developed a chatbot using Streamlit that retrieves data from multiple databases based on natural language prompts. Integrated the Llama 3 model and LangChain SQL agents to convert prompts into SQL queries, with error-handling to refine queries for accurate results. Enabled seamless connection to SQLite or MySQL Workbench, allowing database selection based on requirements. Implemented a history tab to track previous queries and responses for reference. The application supports complex queries, optimizes performance for large datasets, and features a modular design for future scalability.
Technologies used: Flask, Langchain, SQL_agent, Openai, Streamlit

Honors and Awards

- **Employee of The Month (Jan - 2024)**
  Recognized for developing and fine-tuning a Large Language Model (LLM) using LoRA and QLoRA techniques on Vertex API to automate the conversion of test instructions into BDD format.

- **Tech Hero Award - 2024**
  Recognized for conceptualizing and developing an in-house Python OCR solution increasing response speed by 3x, and reducing annual renewal costs by $300K.

Certifications and Courses

Red Hat Certified System Administration (RHCSA)
Optical Character Recognition (OCR) (Udemy)

Education

- **Gitam University**
  Bachelor of Technology – Computer Science *July 2018 - May 2022*