Viraj Hapaliya

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Summary

Machine Learning Engineer with extensive experience developing and deploying scalable and secure ML solutions. Demonstrates expertise in designing ML architectures on AWS, leveraging skills in deep learning, Python, and cloud technologies. Successfully transitioned to a leadership role, guiding projects from conception to deployment while collaborating with cross-functional teams. Eager to utilize proven skills in cloud-based architectures to drive high-impact ML projects.

Skills

- Python, Reactjs, Css, JavaScript, C, PostgreSQL, MySQL, Git, OpenCv, Langchain, TensorFlow, Keras, PyTorch, Deep Stream, Gstreamer, NLP, DJago, Flask, Azure, Cloud Computing, CI/CD, AWS, Lambda, OOP, Docker, Jenkins, Microservices, Distributed Systems, Machine Learning, Backend, English, Hindi, Gujarati, C++, Github Actions, Kubernetes

Work Experience

Amenity **Aug 2020 - Present**

Software Engineer

- Led and participated in client research and development projects from proof of concept to deployment, focusing on scalable and reliable solutions.
- Participated in code development, testing, and deployed applications on AWS, improving cloud server management for stable operations.
- Utilized Python with Django REST API for backend services, with expertise extending to Docker and AWS to streamline project deployments.
- Promoted to team lead, where I enhanced project outcomes by managing client communication, guiding project planning and timelines, and facilitating team collaboration.
- Trained junior developers, fostering a proactive approach to problem-solving and technology adoption to meet project goals.

Silver Touch **Jan 2020 - Jul 2020**

Trainee Engineer

- Initiated my professional career on an academic-based transition path with a focus on gaining important C# foundational skills.
- Developed core competencies in Python, specifically for machine learning applications, and explored basic techniques and libraries.
- Completed assigned projects monthly, employing machine learning techniques and initial exposure to AWS environments.

Education

V.V.P. Engineering College **Aug 2016 - Apr 2020**

Bachelor of Engineering, Electronics & Communication

Projects

AI Interviewer

- We have developed a web app where we can schedule AI Interviews with candidates. In this project we have used different LLM models and created a backend AI flow using langchain.
- Technologies : Python, Django, Reactjs , WebSocket, Webrtc, Langchain, PostgreSQL

Document Parser

- Using RAG flow we have developed a document parser which takes pdf, .doc and .docx as input file return structure json with 90% accurate data.
- Technologies : python, Pypdf2, Langchain, Streamlit

Conversation Chatbot

- Based on provided input, the user can ask any question related to the document. Using a vector database we retrieve relevant info from documents and provide LLM and LLM responses with appropriate responses.
- Chabot maintains the user's history and also takes history into consideration while providing answers.
- Technologies : Python, LLM API, RAG flow, Langchain, Langsmith, ChromaDB

3D Skeleton Activity Recognition(R&D)

- Developed and implemented autoencoder-based neural networks for 3D skeleton activity recognition, leveraging PCA and t-SNE for feature visualization.
- Technologies : OpenCV, Numpy, Pandas, Matplotlib, Autoencoder,PCA, TSN-e, TensorFlow, keras, Custom CNN

Roof Fault Detection

- Developed and deployed a Django-based RESTful API for drone image analysis, utilizing AWS services to train AI models for roof damage detection and generating custom reports.
- Technologies : Django REST API, Django Template, OpenCV, Custom PDF, Yolo, AWS EC2, AWS S3, AWS Rekognition Service, PostgreSQL, AWS RDS

Custom Person Detection & Tracking

- Developed and trained person detection models using normal, 90-degree, and fisheye cameras, integrating tracking algorithms for accurate person identification and counting.
- Generated heatmaps and optimized the project for Intel systems with the OpenVINO toolkit, deploying on edge devices like Jetson Nano with DeepStream SDK.
- Implemented age and gender detection, achieving 15-18 FPS on live RTSP streams for comprehensive real-time analytics.
- Technologies : Deepstream SDK, Yolov4, Gstreamer, Jetson nano,Jetson Xavier, OpenVino, TensorFlow

ANPR Detection

- Engineered and trained an ANPR model to accurately detect and recognize text on car number plates, employing state-of-the-art methods.
- Created a streamlit demo for image upload and number plate identification, alongside an API for retrieving number plate data from images with an API key.
- Technologies : OpenCV, Yolo, Streamlit, Flask, OCR, API, Rest Framework, Django

Nurse Calling System

- Designed and implemented the GUI for a nurse calling system's hub monitor, displaying individual wireless switch alerts with room and bed identifiers.
- Programmed switch logic in Embedded C and created a single executable file for Linux ARM deployment.
- Technologies : Embedded C, PyQt5, Qtm, Pyinstaller, Linux

Pose Estimation Annotation Tool

- Engineered a PyQt5 application incorporating a pose estimation model for frame-by-frame image and video annotation, with server upload and local export features.
- Compiled the project into a single executable file for Windows systems.
- Technologies : PyQt5, PyQt5 Designer, Pyinstaller, Mediapipe Pose estimation model

Cyber Security Web App

- Architected and implemented a cybersecurity website using the Django REST framework, designing the database and project architecture with PostgreSQL.
- Integrated 12-14 tools, developed scripts for data fetching and AWS RDS updates, and deployed via CI/CD pipeline with Jenkins and Docker, managing code updates through Bitbucket.
- Technologies : Django REST, React Js, Docker, Jenkins, PostgreSQL, Cron Job, AWS RDS, AWS EC2, Team Management

Amenity R&D

- Explore the Open3D library and GUI in Jetson device for 3D reconstruction
- Worked on Tello drone camera view capturing and controlling using python script
- Using ZED2 camera, worked on depth images, 3D object detection and 3D pose estimation
- Trained custom object detection model using TensorFlow object detection API
- Written Embedded C program for hardware like ESP32, ESP8266, ESP01, Raspberry pi and Banana Pi
- Using Macvic drone's footage trained person detection model, social distance maintenance and mask detection
- Worked on intel's realsense D415 camera for 3D reconstruction and point cloud generation
- Technologies : OpenCV, Librealsense, Open3D, ZED SDK, OpenGL, Yolo, Tello SDK, TensorFlow object detection API, Raspberry pi, Banana Pi

Certifications

- **Machine learning by Andrew NG**: Coursera
- **Deep learning Specialization**: deeplearning.ai
- **Optimize tensorflow models for deployment**: TensorFlow