Sahil Singh

AI Engineer | MLOps- Python | MySQL

Highly proficient Python Developer and LLM Specialist with expertise in big data technologies and machine learning. Adept in Python, PySpark, and cloud platforms like AWS and Azure, specializing in designing, developing, and deploying ML models and solutions. Strong focus on end-to-end ML pipelines, statistical analysis, and ML Ops. Excellent communicator with a proven track record of collaborating across functions to deliver scalable, optimized solutions for complex problems.

Technical Skills

Languages : Python, Machine Learning, NumPy, Pandas, Computer vision BeautifulSoup, PySpark, NLP, LLMs, SLMs, RAG pipelines

Frameworks : Django, TensorFlow, Flask, FastAPI, PyTorch, ReactJS

CI/CD Tools : GitLab

Databases : MySQL, CSV, PostgreSQL

Operating Systems : LINUX, Windows,macOS

Code Versioning : GitLab

Concepts & Processes : DevOps, Agile, CI/CD, Design Patterns, Problem-Solving

Cloud Platforms : AWS

Professional Experience

Company : Avisoft
Role : Python Developer
Tenure : April 2021 - Till Now

Major Projects Undertaken:

Employee Management System

The Employee Management System, built on FastAPI, is a powerful solution tailored to streamline company staff management. It simplifies key tasks like adding, removing, and updating employee details, and optimizing workforce data handling. With a secure login system, it ensures the confidentiality of sensitive company information. The system's intuitive interface enhances the efficiency of employee record management, thus improving overall organizational effectiveness and HR processes.

Technologies used:

- **Backend** : MySQL, CSV
- **Frontend** : HTML, CSS, Reactjs
- **Framework** : Django
- **Language** : Python, SQL,
- **Libraries** : NumPy, Pandas, LLMs, computer vision
- **Cloud Platform** : AZURE

Responsibilities:

- Leveraged NumPy for efficient numerical computations and data manipulation tasks.
- Utilized Pandas to preprocess and analyze large datasets, simplifying tasks such as adding, removing, and updating employee details.
- Applied SQL for seamless database management, ensuring secure storage of company information.
- Integrated PySpark for big data processing, enhancing the system's capability to handle large-scale data efficiently.
- Collaborated with team members to integrate FastAPI into the system, developing efficient API endpoints for smooth interaction, and enhancing functionality and usability.
- Explored LLMs and computer vision technologies to enhance system capabilities for natural language understanding and image processing tasks, potentially automating certain HR processes.

Laptop Price Predictor

The primary purpose of this project was to provide users with a user-friendly interface to predict laptop prices based on their specifications effortlessly. By integrating machine learning algorithms, the application aimed to assist consumers in making informed purchasing decisions by estimating the fair market value of laptops.

- **Technologies used:**
- **Language** : Python
- **Framework** : Django,
- **Libraries** :NumPy, Pandas, Matplotlib, Scikit-Learn, BeautifulSoup, Tensorflow, pytorch
- **TOOLS :** AzureML ,AzureSQL

Responsibilities:

- **DataCreation**: Scraped Websites like Amazon, eBay, or Best Buy often provide detailed product listings, including specifications and prices, which can be scraped for laptop data.
- **Data Cleaning**: Conducted thorough data cleaning procedures to ensure the dataset was free from inconsistencies, missing values, and outliers, rendering it suitable for feature engineering.
- **Feature Engineering**: Executed feature engineering techniques to derive new features and enhance the predictive power of the dataset, optimizing its usability for model training.
- **Normalization**: Applied normalization techniques to standardize the features within the dataset, ensuring uniformity and mitigating the impact of feature scales on model performance.
- **Model Training**: Utilized classification algorithms to train predictive models on the prepared dataset, leveraging techniques such as cross-validation to optimize model performance.
- **Prediction Algorithm Implementation**: Implemented prediction algorithms within the model framework, enabling accurate estimation of outcomes based on input features, thereby facilitating informed decision-making.

Enhanced Chatbot with Retrieval-Augmented Generation (RAG)

An advanced chatbot system that utilizes Retrieval-Augmented Generation (RAG) to provide accurate, context-aware responses. By integrating state-of-the-art language models with a robust retrieval mechanism, the chatbot enhances user interactions with dynamic and relevant information. This project aims to improve user experience in various domains such as customer support, virtual assistance, and education by delivering precise and comprehensive responses.

Technologies used:

Language : Python

Framework : ReactJs ,FastAPI

Libraries : NumPy, Pandas, Matplotlib, Scikit-Learn, TensorFlow, Hugging Face Transformers, FAISS (or Milvus for vector storage)

Cloud Platform : AWS

Responsibilities:

Data Collection and Preparation:

- Curated and preprocessed a diverse dataset to ensure it was suitable for feature extraction.
- Performed feature engineering and normalization of the dataset to enhance model performance.

Model Training and Integration:

- Trained a large language model (e.g., T5, BERT) on the processed data.
- Implemented the Retrieval-Augmented Generation framework to integrate retrieval mechanisms with the generative model.

System Development:

- Developed a robust retrieval system using FAISS or Milvus for efficient vector storage and similarity search.
- Integrated the RAG model into a chatbot interface, ensuring seamless interaction between retrieval and generation components.

Implementation and Optimization:

- Implemented advanced prediction algorithms to improve the chatbot's accuracy and responsiveness.
- Optimized the system for low latency and high accuracy in real-time applications.

User Interface and Deployment:

- Designed an intuitive and interactive user interface to facilitate smooth user interactions.
- Deployed the chatbot system to a production environment, ensuring scalability and reliability.