Muhammad Faizan

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Profile (AI Engineer):

- AI Engineer with a robust foundation in Software Engineering, bringing hands-on experience in AI and Machine Learning projects.
- Expertise in the full spectrum of Data Science processes, from Data Gathering, Exploratory Data Analysis (EDA) and feature engineering to model training, fine-tuning, and deployment.
- Proven ability to integrate machine learning and deep learning and LLM based solution into applications,, enhancing functionality and user experience.
- Strong communication and interpersonal skills, adept at collaborating with cross-functional teams to solve complex business problems through innovative AI solutions.
- Agile and adaptable, with a track record of contributing to AI-driven insights and advancements in dynamic environments.

Technology Skills:

Frameworks: Scikit-Learn, PyTorch, TensorFlow, Keras**,** Apache Spark**,** OpenCV**,** Numpy**,** Pandas**,** Matplotlib**,** Seaborn**,** Plotly**,** Flask, Fast, Selenium, Beautiful Soup, bubble.io, Langchain, djangorestframework.

Skills: Machine Learning Algorithms**,** Deep Learning modeling**,** Data Visualization (Matplotlib, Seaborn, Plotly)**,** Feature Engineering**,** Predictive Modeling, Model Evaluation and Selection**,** Big Data Technologies (Apache Spark)**,** Data Cleaning and Pre Processing**,** Statistical Analysis**,** Exploratory Data Analysis (EDA)**,** Web Scraping, Database Querying**,** API Integration, Model Deployment (Fast API, Flask),Backend development(Django).

LLM Based Skills: Multi-Agents Bots, RAG (Retrieval-Augmented Generation) Based Systems, Langchain, OpenAI and Open Source LLM Based Projects.

Computer Vision: Object Detection, Object Recognition, Image Processing.

Database: MySQL, MS SQL, Posrtege SQL, BigQuery, MongoDB

Cloud Platforms: Google Cloud Platforms (GCP), AWS

Work Experience

Machine Learning Engineer
January 2024 – Present| Cplus Soft | Domain: Artificial Intelligence(AI)

Responsibilities

- Designed and implemented machine learning algorithms to solve complex problems.
- Worked on deep learning projects using PyTorch and TensorFlow.
- Conducted data analysis and visualization using Matplotlib, Seaborn, and Plotly.

- Developed predictive models and performed model evaluation and selection.
- Engineered features and cleaned data for optimal model performance.
- Integrated APIs for data retrieval and model deployment.
- Leveraged big data technologies such as Apache Spark for large-scale data processing.
- Utilized SQL and NoSQL databases for data storage and querying.
- Deployed ML models on cloud platforms like AWS and GCP.
- Worked on LLM-based projects, including Multi-Agent Bots, RAG-based systems, and open-source LLM implementations using Langchain and OpenAI APIs.

Junior Software Engineer
Febuary 2023 – December 2023| Devbasis Technology | Domain: Software Development and AI

Responsibilities

- Developed and implemented AI-based solutions to enhance software performance.
- Collaborated with data scientists to integrate machine learning models into production systems.
- Conducted data preprocessing and feature engineering for ML projects.
- Utilized Python libraries such as Scikit-Learn, TensorFlow, and Keras for developing ML models.
- Designed and executed test cases for validating ML algorithms.
- Worked on deploying ML models using Flask and FastAPI for various applications.
- Participated in code reviews and provided insights on improving ML pipeline efficiency.

Education:

2019-2023 | University of Management and Technology, Lahore | Graduate as Software Engineer | Grades 3:2
Data Science Related Modules Covered: Statistics, Data Mining, Deep Learning, Neural Networks and Optimization, Business Intelligence and Business Analytics, Predictive Analytics, Data structures and Algorithms, Database Systems.

2017-2019 | QPS College, Sialkot| Grades 75%
- Organised blood donation camps and encouraged college colleagues towards initiatives.
- Lead engagement and delegate management verticals as a core committee member for an inter-college sports event.
- Anchored multiple cultural and sports activity including Fresher's Party, Sports award ceremony, and Farewell.
- Founded multiple cultural clubs to promote engagement and refine talent across the student community.

Notable Projects:

AI Graphics Apparel – Computer Vision
- The application features dynamic inpainting for a variety of shirts, enabling customization with different colors, designs, and logos. Using Google's "MediaPipe" open-source pre-trained model, body key points were extracted to adjust the angle of the logos based on shoulder key points. The "Segformer-B2-Fashion" pre-trained open-source model was utilized to obtain shirt mask segments. Morphological operations (dilation and erosion) were applied to achieve precise logo positioning and sizing dynamically for any scenario. The application was tested on Streamlit and deployed on AWS.
- **Key Components and Technologies:** Media pipe, Segmentation, Segformer-B2-Fashion, pixel-to-pixel image transformation, Morpholoogical operation (erosion and dialation), Streamlit, AWS

AI image generator – Computer Vision | Diffusion Models
- This project involves generating modified interior images based on user inputs. Users provide an interior image (such as a kitchen or bedroom) along with a textual prompt specifying changes they wish to see. The pipeline begins by receiving the input image and prompt, followed by using the Segment Anything Model (SAM) by Meta to create a binary mask of the specific area to be modified. The input image and binary mask are then passed to a diffusion model called 'In-Painting with Stable Diffusion using 🧨 diffusers',

which generates the final altered image. This project utilized skills in computer vision, image processing, machine learning, deep learning, and Python, with specific applications of SAM and stable diffusion techniques.

- **Key Components and Technologies:** SAM (Segment Anything Model) and Stable Diffusion with 🧨 diffusers.

Scalable Fraud Detection - Big Data | SQL | PySpark | Databricks

- Implemented a Fraud Detection Model on Azure Databricks leveraging PySpark for processing large-scale datasets. Utilized SQL for efficient data querying within a Big Data environment. Achieved high scalability and effectiveness in detecting fraudulent activities by integrating Apache Spark libraries for advanced data processing and analysis.
- **Key Components and Technologies:** PySpark, SQL, Apache Spark, Azure Databricks.

Knee MRI dataset - Deep Learning | CNN Architectures | TensorFlow | Keras

- Developed a Deep Learning model for analyzing Knee MRI datasets using TensorFlow and Keras. Explored and compared various CNN architectures for enhanced image analysis. Created a custom CNN architecture incorporating attention mechanisms to improve model performance.
- **Key Components and Technologies:** TensorFlow, Keras, Convolutional Neural Networks (CNN), Image Analysis, Attention Mechanisms

AI model to critique music – Feature Engineering

- Engineered AI software leveraging the Spotify Web API for song popularity metrics, trained a machine learning model on a dataset of 150,000 entries, conducted deep feature analysis for affective features, and implemented continuous retraining with PostgreSQL for data storage and deployed on EC2 instance of AWS. This project ensures up-to-date predictions on song popularity trends, facilitating its practical application in real-time music
- **Key Components and Technologies:** Spotipy web API, PCA, Random Forest, FIne Tunning, Feature extraction and analysis, PostgreSQL, AWS (EC2 and S3 bucket)

Comprehensive Medical Data Extraction and Integration – Data Scraping

- In this project, I scraped entire websites from three different sources to extract medical data, resulting in a collection of data from 50,000 URLs. This process included downloading videos and audios from the scraped links and subsequently deploying the data into a user database. The project involved using Selenium for web scraping, Amazon S3 for storing audio and video files, and extensive data mapping, cleaning, and redundancy removal to ensure data quality.

  Key Components and Technologies: Selenium, Web Scraping, Data Mapping, Data Cleaning, Redundancy Removal, Amazon S3

AI Lead Generation – Backend Development

- In this project, I was responsible for the end-to-end development of the backend, from design to production. The backend was built using Django and Django Rest Framework. The project involved creating APIs that enabled our application to search and retrieve posts from various platforms, such as Reddit, based on user queries. Once the posts were retrieved, OpenAI was used to analyze and determine the relevance of the posts and their associated comments. The results, along with their relevance status, were then stored in a database. Additionally, I implemented schedulers that periodically ran to generate AI-based replies to relevant posts or comments. These AI-generated responses were then automatically posted back to the respective platforms to engage in ongoing conversations.

Key Components and Technologies: Django, Django Rest Framework, API Development, OpenAI, Web Scraping, Data Analysis, Database Management, Task Scheduling

Certification

- Data Visualization Certification from Great Learning classroom.
- SQL from Hackerank

Languages

- English (Fluent)
- Urdu

Interest

- Listening to music, travelling, trekking, cooking, playing cricket, and watching infrastructure and current affairs news.

Learning

- Deployments on Azure.

Reference

- References are available on request.