

Abdul Rafay

Software Engineer

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Professional Summary

Computer Science graduate with hands-on experience in AI and software development, proficient in building predictive models, developing web and mobile applications, and designing scalable systems. Skilled in Python, TensorFlow, Scikit-learn, .NET, Flutter, and the MERN stack. Strong foundation in algorithms, MLOps practices, and DevOps workflows. Eager to contribute to AI-driven projects in a dynamic environment.

Experience

Intern, InternnCraft

June 2024 – August 2024

- Developed and deployed cross-platform mobile applications using Flutter and Dart.
- Implemented responsive UI designs with custom animations and transitions.
- Integrated Firebase Authentication, Cloud Firestore, and Realtime Database for seamless backend operations and data synchronization.
- Constructed RESTful API interfaces to connect with external services, implementing efficient error handling and caching strategies.
- Utilized Git for version control and implemented CI/CD pipelines to streamline the development and deployment process.

Technical Skills

- **Programming Languages:** Python, C++, C#, Dart, Kotlin, JavaScript, SQL
- **Frameworks & Libraries:** TensorFlow, Scikit-learn, NumPy, Pandas, Flask, FastAPI, MLflow, DVC, ASP.NET Core, React.js, Next.js, Nest.js, Flutter
- **Tools & Platforms:** Git, Jenkins, Docker, Prometheus, Grafana, AWS, Google Cloud, ModelBit, Firebase, Railway
- **Databases:** MySQL, SQL Server, MongoDB, Firebase Firestore, Realtime Database

Projects

LeafSpec – FYP (Python, TensorFlow, MongoDB, Flutter)

GitHub Links: ([Flutter app](#) | [Model files](#))

- Developed a Flutter app that classifies plant species from leaf images using a deep learning model.
- Trained and evaluated CNNs including LeNet-5, AlexNet, EfficientNet; deployed fine-tuned ResNet based on accuracy.
- Integrated the model via a Python backend using Modelbit, returning predictions with confidence scores.
- Displayed 25+ plant attributes (sunlight, soil type, growth rate, etc.) using dynamic UI backed by MongoDB.
- Included Google Sign-In, favorite species, and reusable widget structure.

Video Frame Prediction – UCF101 (Python, TensorFlow, Flask)

GitHub Link: ([Repo](#))

- Developed and compared ConvLSTM, PredRNN, and Transformer-based architectures to predict 5–10 future frames from 10 input frames on the UCF101 dataset.
- Engineered data preprocessing pipelines for frame extraction, resizing to 64×64, normalization, and sequence batching.
- Built a Flask web service exposing a REST API that accepts input frame sequences and returns predicted frames and reconstructed video clips.
- Designed a simple frontend dashboard to upload video clips, visualize input vs. predicted frames, and download reconstructed predictions.

MLOps Environmental Monitoring & Pollution Prediction System (Python, DVC, MLflow, Flask, Prometheus, Grafana)

GitHub Links: ([Repo](#))

- Architected an end-to-end MLOps pipeline: data ingestion from OpenWeatherMap API, versioning with DVC, and experiment tracking in MLflow.
- Implemented ARIMA and LSTM time-series models for short-term air quality (AQI) forecasting; automated model retraining upon new data arrival.
- Deployed the predictive service via a Flask API containerized with Docker, facilitating real-time AQI predictions.
- Integrated Prometheus for metrics collection (latency, throughput, model accuracy) and built Grafana dashboards for live system and model performance monitoring.

CyberCrack Interview Trainer (Tkinter, Python, OpenAI Whisper)

Website Link: ([Website](#))

- Built a desktop application with Tkinter for live cybersecurity interview practice.
- Implemented real-time audio capture and transcription using OpenAI Whisper, with speaker-optimized “Interview Mode.”
- Integrated GPT-powered AI feedback on user responses and screenshot-based code review
- Designed license management system supporting trial periods, license activation, and status indicators; included Prometheus metrics for usage monitoring.

Online Courses & Certifications

- LangChain for LLM Application Development (Feb. 2025)
DeepLearning.AI: [Certificate](#)

Education

FAST NUCES, Islamabad

2021 – 2025

Bachelor of Science in Computer Science (BSCS)