

Wahib Farhat

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BACKEND SOFTWARE ENGINEER - PYTHON, APIS & SYSTEMS INTEGRATION



Backend software engineer with 7 years of experience building and integrating APIs, backend services, and data pipelines across telecom, applied research, and cyber-physical systems environments. I specialize in designing REST APIs, integrating third-party and internal systems, working with relational and time-series databases, and building reliable backend services with Python, Docker, and cloud-native CI/CD workflows.

PROFILE

Backend & API development: Python, FastAPI, Django, REST API design, API integration, third-party and internal system integration, microservices, JSON data formats, Node.js, TypeScript

Databases & data pipelines: PostgreSQL, TimescaleDB, MQTT streaming data ingestion, data mapping, time-series storage, event-driven data pipelines

Infrastructure & DevOps: Linux, Docker, Kubernetes, CI/CD, GitLab CI, GitHub Actions, AWS, production operations, monitoring, system upgrades, documentation

Additional integration experience: ML inference service integration, edge deployment (Raspberry Pi), digital twins, hardware/software interfaces

PROJECTS

Continuous-Learning Digital Twin Platform | TU Clausthal - Databases and Information Systems Group

github.com/Wahib13/virtual-test-rig

Master's thesis: Design and Implementation of a Data-Driven Digital Twin with Continuous Learning Using MLOps Principles

Stack: Python, FastAPI, PostgreSQL/TimescaleDB, MQTT, Docker, GitLab CI, MLFlow, Prefect, TensorFlow/Keras.

- Designed and built backend APIs and data pipelines for an MLOps platform that detects when model predictions no longer match real system behaviour and automatically triggers retraining and model promotion.
- Built an event-driven backend architecture for streaming data ingestion, service-to-service integration with inference and monitoring components, and webhook-driven zero-downtime deployment of updated models.
- Integrated FastAPI backend services with TimescaleDB for time-series storage and with downstream ML inference services, using drone wing-tip deflection forecasting from simulated sensor data as the use case.
- Designed the backend architecture to be modular and asset-agnostic, so new data sources and downstream services can be integrated without reworking the core pipeline.

Trend Engine - Personal News Aggregator with Semantic Search

github.com/Wahib13/trend-engine

- Built a Python backend that ingests articles from RSS feeds and generates embeddings for each article to support semantic keyword search over the stored collection.
- Extending the pipeline into an event-driven, real-time backend architecture with WebSocket delivery and live keyword extraction from incoming articles.

PROFESSIONAL EXPERIENCE

Research Associate - Backend & Systems Integration | TU Clausthal

2024 - 2026

- Applied backend integration engineering to cyber-physical systems research, centered on a drone wing digital twin use case.
- Designed and built backend services integrating simulated sensor data, ML inference, and time-series storage behind a unified API layer.
- Architected an MQTT-based event-driven pipeline integrating streaming simulated sensor data with storage services, inference services, and downstream monitoring APIs.
- Built REST APIs exposing simulated sensor telemetry, attitude data, and predictive model output for consumption by monitoring and visualization clients.

- Containerized the full stack with Docker and deployed it to a Raspberry Pi, with GitLab CI/CD automating builds, tests, and rollouts.
- Worked at the interface between software, sensor systems, domain experts, and research engineers to translate ambiguous technical requirements into working backend solutions.

Backend Developer - API & Systems Integration | Enabled Core Services

2022 - 2023

- Led full lifecycle delivery of client-facing digital applications, owning backend architecture and implementation in Python from requirements discovery through testing and deployment.
- Engineered backend APIs and integration-facing components with a focus on maintainability, operational handover, documentation, and regression reduction.
- Collaborated closely with stakeholders to translate business and operational requirements into scalable backend designs and production-ready features.

Fullstack Developer - Backend APIs, Internal Tooling & Production Integration | Vodafone Ghana

2018 - 2023

- Built and maintained telecom-facing backend web services and REST APIs supporting customer operations and internal tooling at national scale.
- Owned deployments and provided third-level technical support for production-critical systems where availability, maintainability, and operational correctness were essential.
- Re-architected legacy components, authored API specifications, and worked cross-functionally with operations, product, and engineering teams to shape reliable digital services.

Software Operations Engineer - Telecom Systems Integration | Huawei Technologies Ghana

2015 - 2018

- Supported operations of Huawei's Service Delivery Platform underpinning MTN Ghana's telecommunications infrastructure.
- Delivered API integrations enabling third-party service provider interactions, and led system upgrades and server maintenance activities for high-availability production services.
- Automated operational scripting and monitoring tasks, reducing manual checks and improving reliability in a telecom environment with strong uptime requirements.

EDUCATION

MSc Computer Science | TU Clausthal, Germany

2023 - 2026

BSc Computer Engineering | Kwame Nkrumah University of Science and Technology, Ghana

2011 - 2015

LANGUAGES

English: Native

German: B1