

Ali Asfahani

Beirut, Lebanon — ali.assfahani@net.usj.edu.lb — +961 76 415 001

EDUCATION

MS 1 - Artificial Intelligence

2026

Université Saint Joseph (USJ)

ESIB

BS - Computer Science

2023

Cnam

Computer engineering department

RELEVANT PROJECTS

Decision Intelligence Assistant

RAG · ML Baseline · Docker · React

- Built a full stack AI assistant over real Twitter customer-support data: RAG pipeline (vector DB + LLM), non RAG baseline, and a trained ML priority classifier.
- Engineered a four way comparison (RAG, non RAG, ML classifier, LLM zero shot) measuring accuracy, latency, and cost per call, and produced a data-driven recommendation for production deployment at scale.
- Orchestrated the entire stack (FastAPI backend, React frontend, vector store) with Docker Compose using a single command, named volumes, and structured query logging throughout.

Document Classifier Service

ConvNeXt · FastAPI Layered Architecture · SFTP Pipeline · HashiCorp Vault

- Fine tuned a ConvNeXt Tiny/Small on RVL-CDIP (16 document classes, 320k images) achieving production-grade accuracy; shipped only model weights, a SHA-256 model card, and a 50 image golden set to the repo.
- Built a strictly layered FastAPI service (api → services → repositories → domain) with JWT auth (fastapi-users), Casbin RBAC (3 roles), Redis backed caching (fastapi-cache2), and Alembic migrations — no business logic leaks between layers.
- Delivered a full ingestion pipeline (SFTP → MinIO → RQ worker → inference → overlay) with HashiCorp Vault secret resolution, structured JSON logs carrying request IDs across services, and CI gates enforcing golden set byte identical replay.

Reliability Analysis of Probabilistic Event Forecasts

Statistics · Python

- Built a probabilistic forecasting model to estimate outcome likelihoods of events, focusing on confidence calibration
- Performed historical back testing to analyze prediction reliability and failure modes under changing conditions

Drift Triage Co-Pilot

MLOps · LangGraph Supervisor · Redis Queue · Self-Healing Pipeline

- Built a self healing MLOps stack: trained and registered a binary classifier with MLflow, served predictions via FastAPI with Pydantic validation, and computed drift reports (PSI on numerics, chi squared on categoricals) over rolling prediction windows.
- Implemented a LangGraph supervisor with three sub agents (triage, action, comms), Postgres checkpoint persistence across restarts, and human in the loop approval gating any Production registry change.
- Dispatched long running tools (replay, retrain, rollback) through a Redis queue with idempotency keys, exponential backoff retries, and a dead letter queue; agent routing logic covered by snapshot regression tests in CI.

Educational Full Stack Java Desktop Application

Java

- Built a desktop application in Java applying object-oriented design patterns to enforce clean architecture and scalable software design.

AI-Based Cycloidal Path Optimization for Delta Robot

Python

- Developed a simulation and optimization pipeline to fit a 6-parameter cycloidal trajectory to Delta robot motion data
- Implemented gradient descent (NumPy, finite differences) to minimize MSE, reducing loss from 4.7 to 0.06
- Achieved high-accuracy trajectory fitting (RMSE: 0.24, R 0.99 on both axes)
- Validated convergence through residual analysis and trajectory comparison

EXPERIENCE

Web Development Intern

Nov 2022 – Jan 2023

- Developed a dynamic web platform for an education center using HTML, CSS, JavaScript, PHP, and asynchronous communication
- Designed system architecture including actors, workflows, and database models
- Implemented role based access control and contributed within an agile development process

Freelance Software Developer

Feb 2023 – Dec 2024

- Delivered custom software and web solutions for clients, translating requirements into maintainable and functional systems
- Built and modified applications using Java and web technologies, focusing on reliability and practicality
- Worked directly with clients to diagnose issues, propose solutions, and iterate based on feedback

SKILLS

Programming: Python · Java · SQL · Object Oriented Design · Design Patterns · REST APIs · Agile Development

AI and Data: Probabilistic Modeling · Decision Trees · Random Forests · Gradient Boosting · RAG · Model Evaluation (AUC, F1, RMSE) · Drift Detection (PSI, chi squared) · CNN basics · Scikit-learn and other relevant libraries

Web: HTML · CSS · JavaScript · PHP · React

LLMs and Agentic Systems: Prompt Engineering and Versioning · Embeddings and Semantic Search · LLM Prompt Chaining

Backend, APIs and Infrastructure: FastAPI · Redis Queue (RQ) · PostgreSQL + pgvector · SQLAlchemy · Docker

Linguistic: Arabic(native) · English(Fluent) · French(B2)

Bootcamps:

-**SE Factory** AI engineering bootcamp (on going)

-**Forward MENA** Full stack Development with AI