

Zine-Elabidine LAABOUDI

AI Engineer

✉ zine.elabidine251@gmail.com

🗣 Zine-Elabidine

🌐 zine-elabidine-laaboudi

🌐 zine-elabidine.github.io

📍 Based in Morocco · Arabic, French, English (TOEIC 950/990)

EXPERIENCE

Sekera Group

AI Engineer

Casablanca, Morocco

May 2025 – Present

Multi-tenant security-operations (SOC) platform: I work on its **agent layer**, from the first version to running it in production.

- **Production agents** on the Claude Agent SDK: custom **MCP** tools, subagents, sessions that can be steered mid-turn, **human approval** of actions, background jobs under budget guardrails; tool-driven response actions (CrowdStrike, Microsoft Graph / Teams, GLPI, Active Directory) from a catalog validated in **CI**.
- **Observability**: token, cache and cost accounting per session (interrupted turns included), a live stream of in-flight turns, job tracing.
- **Multi-provider LLM gateway** (litellm): **5 backends** behind one interface, normalized SSE streaming, encrypted bring-your-own-key credentials.
- **Safety and back end**: mandatory **gVisor** sandboxes for agent sessions (all Linux capabilities dropped, zero secrets inside); async **FastAPI** microservices on **PostgreSQL**, delegated auth, Python SDK, Docker, CI/CD.

SEGULA Technologies

AI Engineer

Casablanca, Morocco

Jun 2024 – Oct 2024

- Built an attention-based encoder-decoder LSTM that reconstructs crash-test signals to detect sliding vs. bouncing impacts, supporting vehicle safety validation.
- Built an ML classifier (scikit-learn) that flags defective welding points in simulation models, automating a manual quality check.

SEGULA Technologies

AI Research Intern

Casablanca, Morocco

Feb 2024 – Jun 2024

- Prototyped an attention-based reinforcement-learning solver for the capacitated vehicle routing problem with time windows, generating near-optimal routes without hand-crafted heuristics.

AIOX Labs — AI as a Service

Data Science Intern

Rabat, Morocco

Jun 2023 – Aug 2023

- Built a **RAG** chatbot (Llama 2, embeddings, FAISS, LangChain) that let staff query customer information in natural language, replacing manual lookups across scattered records.

SELECTED PROJECTS (open source, github.com/Zine-Elabidine)

- **nl2sql: evaluation-driven LLM work.** Execution-accuracy harness (self-test on gold SQL: 99.9%) over the full BIRD dev set (1,534 questions); **7 configurations** benchmarked, best **63.7% EX**. Fine-tuned Qwen2.5-Coder-7B with LoRA SFT → GRPO and **diagnosed why it did not beat the base model**; self-consistency alone added +5.4 points with no training.
- **Diwan + Tarjuman: an agent runtime built from the loop up, no framework.** Tool calling, approvals, child agents, MCP, a sandbox, and long sessions that never run out of context; one conversation can **switch models mid-session** (OpenAI, Anthropic, local vLLM). Tests, type checking and lint in CI.
- **research-mcp: MCP research server.** Concurrent fan-out over 6 providers with graceful degradation, deduplication and a local corpus; every call traced in **Langfuse**.
- **Fundamentals:** a transformer from scratch in PyTorch; studies of positional encodings (RoPE) and PEFT methods.

SKILLS

LLM systems: agents & tool calling, MCP, structured outputs, RAG, embeddings & vector search (FAISS, pgvector), evaluation harnesses, LangChain / **LangGraph**, **Langfuse**, Claude Agent SDK, litellm, Anthropic / OpenAI APIs

Training & inference: LoRA / QLoRA, SFT, GRPO (Unsloth, TRL, PEFT), vLLM, PyTorch, scikit-learn

ML / deep learning: PyTorch, TensorFlow, NLP, reinforcement learning

MLOps & observability: MLflow, Langfuse, CI/CD (GitHub Actions, Harbor), Sentry, token and cost tracing

Back end & infra: Python, SQL, **FastAPI**, asyncio / httpx, Pydantic, SQLAlchemy, **PostgreSQL**, Docker, gVisor, Linux, Git

EDUCATION

Académie Internationale Mohammed VI de l'Aviation Civile (AIAC)

State Engineering Degree (Master's level) — Computer Science

Casablanca, Morocco

Sep 2021 – Jul 2024

CPGE Mohammed VI

Preparatory Classes — Mathematics, Physics

Kenitra, Morocco

Sep 2019 – Jun 2021

DISTINCTIONS

Mastercard & UM6P Fintech Hackathon

3rd place — AI-enhanced digitalization of ROSCA collective savings

Morocco