ZAGHLAOUI KARIM

AI Engineer, Data Scientist Looking for CDI.

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EXPERIENCES

AI Engineer

Lincoln France (Internship)

Feb – Aug. 2025 | Sèvres, France

AI Agent Developer

- Engineered an agentic AI system leveraging RAG for contextual guidance.
- Designed a multi-tool agent architecture with modular capabilities: documentation lookup, storage inventory, and supplier comparison.
- Integrated MCP for tool invocation and seamless function interaction.
- Automated supplier discovery and ordering workflows, generating comparative tables (price, availability, delivery) and enabling direct purchase.
- Optimized reasoning workflows with tool orchestration, enabling dynamic agent action selection.
- **Tools:** LangChain, Weaviate, Chainlit, MinIO, OpenAI API, Ollama, FastMCP.

Pedestrian Detection in Urban Environments

- Trained YOLO models on a mixed dataset of real-world and +15k synthetic CARLA samples, specifically targeting occluded and partially visible pedestrians in urban environments.
- Validated model performance on KITTI, applying XAI techniques for feature insights and systematic failure analysis to address occlusion challenges.
- Explored VLMs (GPT-4V, LLaVA, Qwen2.5-VL) for pedestrian detection.
- **Tools:** PyTorch, YOLO, FiftyOne, Captum, GradCam, FastAPI, OpenAI, Ollama, Docker, React, Carla, Git, Azure DevOps.

AI Research Intern

Polytechnic Institute of Paris, Telecom SudParis

March – Sept. 2024 | Palaiseau, France

- Developed a contextual explanation method for Temporal Graph Neural Networks (TGNNs), achieving an AUC-ACC of 82% or higher.
- Conducted a comparative study with SOTA methods across 6 datasets, article.
- **Tools:** PyTorch, PyTorch Geometry, Scikit-Learn, Pandas, MLflow, Git, LaTeX.

Machine Learning Engineer

ICT-TOWERS (Internship)

Sept. – Dec. 2022

- Developed an AI models for real-time DDoS detection and prevention, achieving an F1 score of 0.98%.
- Managed the end-to-end solution, from CIC-IDS-2017 dataset cleaning and augmentation to real-time deployment via REST API integration.
- **Tools:** TensorFlow, Scikit-Learn, CatBoost, FastAPI, Docker Compose.

EDUCATION

Machine learning, artificial INtelligence and Data (ex. DAC)

Sorbonne University - Master 2 Degree

Sept. 2024 – Sept. 2025 | Paris, France

Artificial Intelligence and Data Science

Higher School of Computer Science (ESI) - Master 2 & Engineer Degree

Sept. 2019 – Sept. 2024

LANGAGES

- **English:** Full Professional Proficiency
- **French:** Full Professional Proficiency

SKILLS

- **Languages:** Python, SQL, C, C++, Java, Dart.
- **Data Science:** TensorFlow, PyTorch, Keras, Numpy, Scikit-Learn, Pandas, YOLO, OpenCV, Matplotlib, Seaborn, Plotly, Hugging Face, Tableau, Power BI.
- **LLM:** LangChain, LangGraph, Langfuse, Ollama, LlamaIndex, LiteLLM, Transformers, vLLM.
- **REST API:** FastAPI, FastMCP, Flask, Django, Stramlit, Gradio, Dash, Chainlit, Nginx.
- **DevOps:** Linux, Git, GitLab CI|CD, GitHub Actions, Docker, Docker Compose, Kubernetes, HELM.
- **MLOps:** MLflow, DVC, ClearML, Airflow, W&B.
- **Cloud:** AWS(S3, EC2, Athena), Azure(Functions, bloobstorage), GCP(Vertex AI).
- **Databases:** MySQL, PostgreSQL, SQLite, Redis MongoDB, Chroma, Weaviate, OpenSearch.
- **Other:** Jira, Confluence, Agile, LaTeX, JSON, YAML.

PROJECTS

Tesla-Mech AI

RAG-Powered Repair Assistant

- Used OpenAI API for embeddings and Weaviate for retrieval, Integrating MinIO for data storage.
- Developed a web interface to query the system.
- **Tools:** OpenAI API, Weaviate, Chainlit, LangChain, MinIO, Docker, Docker Compose, GitLab.

Image.AI

Enhance images using GANs.

- Trained SRGAN on DIV2K for 2x image resolution.
- Trained GAN to perform image colorization.
- Deployed models using REST APIS.
- **Tools:** PyTorch, OpenCV, FastAPI, DVC, Git, GitLab.

SuperTuxKart Champion

RL agent that wins at car rasing game.

- Benchmark algorithms to select the optimal model.
- Fine-tuned the final agent to win in multiple tracks.
- **Tools**: PyTorch, Torch RL, Git, GitLab, MLflow.

OMP-NN

Paralllel MLP implementation in C.

- Used OpenMP to gain $\times 8$ speedup on MNIST.
- **Tools**: Git, GitLab, Make, C, OpenMP.

zkarim.fr

Personal Website/Blog

CERTIFICATIONS

- AWS Solution Architect (AWS - Doing).
- Getting Started with kubernetes (LinkedIn).
- Docker Foundations Professional (Docker).
- TensorFlow Developer (DeepLearning.AI).
- Deep Learning Specialization (DeepLearning.AI).
- Machine Learning Specialization (Stanford).