

# Fouad Chaouki Refis

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 Fouad Chaouki REFIS |  Fch-3388 |

Tazoult, Batna - 05011, ALGERIA

## RESEARCH OBJECTIVE & INTERESTS

A driven, research-focused Masters graduate in Artificial Intelligence and Multimedia seeking a PhD position in Artificial Intelligence and Machine Learning. My research investigates the intersection of Large Language Models (LLMs), foundation-model-enabled swarm intelligence, and interpretable AI to build adaptive, explainable, and scalable multi-agent systems. I envision bridging intelligent communication agents to collective robotic behavior via hybrid architectures for reasoning, learning, and collaboration.

## EXPERIENCE

### • The Bridge Academy (Robot Educatif Algérie) [🌐]

October 2025 - Present

Batna, Algeria

- AI & Robotics Engineer*
- Instructing students (9-17) in core AI & Robotics principles, including programming and sensor integration.
  - Design and development of interactive AI applications to create an immersive and effective learning environment for robotics.
  - Translated complex technical subjects into age-appropriate, project-based lessons, and digital tools.

### • Infraxcode (LAMBDA CODE in algeria) [🌐]

February 2025 - April 2025

Algiers, Algeria

- AI Engineer*
- development of an LLM-based emulator for network devices, designed to help engineers prototype and validate network topologies in a simulated environment reducing setup time and infrastructure cost.
  - Implemente RAG and MCP (Model Context Protocol) to dynamically integrate real-time network queries and metadata into the emulation process. Fine-tune language model to make it task specific.
  - Integrated Hugging Face Transformers, LangChain, LangGraph, and various python libraries.
  - Conducte benchmarking for emulation outputs across various models.

### • ENNA [🌐]

December 2021 - January 2022

Batna, Algeria

- Internship*
- learned about the technical framework that underpins air traffic control systems, such as radar communication systems.
  - observed network administration duties, such as keeping an eye on equipment configurations, system uptime, and traffic.
  - took part in technical talks with engineers about data reliability and safety-critical system design in aviation settings.

## EDUCATION

### • University of Batna 2

September 2022 - June 2024

Batna, Algeria

*Master's Degree in Artificial Intelligence And Multimedia*

- Final average master (2): 15.27 / 20 approximately 3.6 / 4.0 GPA.
- Final average Master (1): 13.30 / 20 approximately 3.2 / 4.0 GPA.
- Masters Degree Modules: Signal Processing, Fundamenatl Of Image Processing, Methods For Artificial Intelligence, Distributed Database, Advanced OOP, Parallel Computing, Classification And Data Analysis, Machine Learning, Multimedia Applications Design, multimedia information retrieving, image processing and GPU programing, form recognition.

### • university of Batna 2

September 2019- May 2022

Batna, Algeria

*Bachelor's Degree in computer science*

- Final average 1st year: 15.09 / 20 approximately 3.6 / 4.0 GPA.
- Final average 2nd year: 13.76 / 20 approximately 3.3 / 4.0 GPA.
- Final average 3rd year: 14.05 / 20 approximately 3.4 / 4.0 GPA.
- Bachelor's Degree Modules: Algebra (1 & 2), mathematical analysis (1 & 2), Computer Structure (1 & 2), Algorithm and Data Structure (1 & 2), probability and statistics. Computer Architecture, Algorithm and Data Structure, Mathematical Logic, OOP, Operating System, Network, Graph theory.Compilation, Operating System 2, Human Computer Interaction, Software Engineer, Cyber-Security, Mobile Application, Artificial Intelligence, Project.

## PERSONEL PROJECTS

- **Project A: [A Project & Master Thesis Report On Design And Creation Of A Swarm Robot]** Sep 2023 Jun 2024  
Tools and skills: Webots, Arduino IDE, C++, GitHub, Simulation, Hardware Prototyping, systematic review, Algorithms [GitHub]
- adopted a hybrid approach combining a systematic literature review, simulation in Webots, and Design a real Arduino-based robots.
  - Designed and built a small-scale swarm robotics system using centralized architecture (master-slave) infrared sensors and DC motors have been used.
  - webots used to Simulate master-slave and follow-the-leader algorithms.
  - Identified key trends, software/hardware requirements, and research gaps in swarm robotics based on a review of 47 peer-reviewed papers from 2014 to 2024.
  - Proposed low-cost swarm design approaches emphasizing scalability, robustness, and decentralization for future real-world applications.
- **Predicting Diabetes Using Machine Learning** Nov 2023  
Tools: Python, scikit-learn, Pandas, Matplotlib, UCI Dataset [GitHub Repository]
- Developed an AI model to predict diabetes risk using clinical features from the UCI Pima Indian Diabetes dataset.
  - Performed exploratory data analysis (EDA), normalization, and feature selection to prepare the dataset.
  - Trained and evaluated multiple classifiers (KNN, Decision Tree, Random Forest, Logistic Regression, XGBoost, MLP, GaussianNB).
  - Achieved high precision and recall scores using cross-validation, and compared models using F1-score and ROC curves.
  - Visualized performance metrics with matplotlib to assist in model selection and interpretability.

## PUBLICATIONS

PUBLICATIONS

- [1]] first author on a manuscript (MDPI Sensors): Refis, F. C., Mahammedi, N. A., Kerrache, C. A., & Dhelim, S. (2025) titled: "From network sensors to intelligent system: A decade-long review of swarm robotics technologies".  
Link: <https://www.mdpi.com/1424-8220/25/19/6115>  
The pre-print version of the paper:  
<https://www.researchgate.net/publication/394833467> From Network Sensors to Intelligent Systems A Decade – Long Review of Swarm Robotics Technologies
- [2]] A. Hamadouche, N. A. Mahammedi, F.C. Refis, and C. A. Kerache. Intellectual Population Inversion Under The Influence Of Artificial Intelligence. (Research in progress (Manuscript in preparation)).

## SKILLS

- **Programming Languages:** Python, C++
- **Database Systems:** Supabase, fire base
- **Data Science & Machine Learning:** huggingface, Langchain, Langgraph, decision trees, scikit-learn, Keras, TensorFlow, XGBoost, Pandas, Matplotlib
- **DevOps & Version Control:** Docker, Git, GitHub, GitLab, CI/CD pipelines
- **Specialized Area:** Prompt Engineering, LoRA/QLoRA Fine-Tuning, RAG, MCP, Python
- **Mathematical & Statistical Tools:** NumPy, SciPy, Statistics, Probability, Graph Theory, Data Normalization
- **Research Skills:** Literature Review, Experimental Design, Data Collection & Cleaning, Simulation, Algorithm Analysis, Scientific Writing, Overleaf

## CERTIFICATIONS

- **Fundamentals of Deep Learning** certification ID number: 1tO0Ys3ITkGJkXM3sgBKrQ NVIDIA Oct 2022
- **Machine Learning with Python** IBM via Coursera Dec 2024
- **Deep Learning Essentials with Keras** IBM Dec 2024
- **Introduction to Deep Learning and Neural Networks with Keras** IBM via Coursera Dec 2024
- **Generative AI and LLMs: Architecture and Data Preparation** Coursera Jan 2025

## ADDITIONAL INFORMATION

### Languages:

English (IELTS Academic certified B2)  
Arabic (Native)  
French (B2)

## REFERENCES

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**1. Prof. Chaker Abdelaziz Kerrache**

Professor (Full), Computer Science Department

Faculty of Sciences, Laboratory d'Informatique et de Mathématiques (LIM), University of Amar Telidji, Laghouat, Algeria

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*Relationship: Research Collaborator*

**2. Dr. Nassim Ahmed Mahammedi**

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*Relationship: Research Collaborator*

**3. Pr. Saber Benharzallah**

Professor, Department of Computer Science

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*Relationship: Master's Course Instructor*

**4. Dr. Ouahab Kadri**

Professor, Department of Computer Science

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*Relationship: Former Instructor (2nd Year Bachelor)*