Bachar Bouguerra Zina

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Education

INSAT: National Institute of Applied Sciences and Technology, Industrial Instrumentation and Maintenance Engineering — 2021–Present

- GPA: 88/100

Pioneer High School of Monastir, Mathematics Baccalaureate — 2017–2021

- Highest Honors (17.97/20)

Experience

Summer Internship, YONNOV'IA – Marseille, France — 06/2025 – 08/2025

- Designed and developed an intelligent virtual assistant integrated into the Odoo 17 open-source ERP platform.
- Adapted and fine-tuned Large Language Models (LLMs) to meet specific business logic and user interaction requirements for the virtual assistant.

Robotics Instructor, EIF Menzah 1 – Tunis, Tunisia — 10/2024 – 03/2025

- Taught basic robotics and programming concepts to children aged 8–12 through interactive and hands-on sessions.

Summer Internship, ACOBA – Monastir, Tunisia — 07/2024 – 09/2024

- Scraped real-time real estate data from French website (Leboncoin) using Python and API integrations, creating a structured dataset for analysis.
- Processed and cleaned scraped data using NLP techniques to prepare it for efficient retrieval and integration into the chatbot's knowledge base.
- Engineered an intelligent chatbot from scratch using the Rasa framework to automate user queries and provide filtered, accurate property information.
- Built and fine-tuned NLP models within Rasa, defining intents, entities, and conversational flows to accurately understand and respond to user requests.

Summer Internship, Draxlmaier – Monastir, Tunisia — 08/2023 – 09/2023

- Worked on optimizing workflow in the logistics department by identifying and implementing improvements to enhance operational efficiency.

Projects

End of Year Project - INSAT

- Built a deep learning model using LSTM on the NASA C-MAPSS dataset to predict the Remaining Useful Life (RUL) of turbofan engines.
- Handled data preprocessing, model tuning, and deployed the solution via Flask for real-time inference.

Professional Personal Project - INSAT

- Developed a cross-platform mobile application using Flutter to provide a seamless and intuitive interface for medical image analysis.
- Trained and optimized a convolutional neural network (CNN) for image classification using TensorFlow/Keras to identify bone fractures in X-ray images.
- Converted and integrated the trained model into the mobile environment using TensorFlow Lite, enabling real-time, on-device inference without requiring a server connection.

Car-Finder - Personal Project

- Developed an AI-powered search engine that allows users to search and filter cars using plain English/French questions.

- Implemented a backend system that converts natural language queries into SQL to retrieve results from a car database.
- Utilized NLP techniques to enhance user interaction and provide accurate search results.

Awards

2nd Place – Orbit 1.0 Ideathon, IEEE CS INSAT 05/2025

- Designed EcoAI-Train, an AI sustainability platform that tracks and reduces energy waste during model training.
- Implemented energy-efficient scheduling and carbon footprint reduction techniques for large AI models.

1st Place – IEEE Region 8 Industrial Bootcamp 4.0 Hackathon, IEEE IAS INSAT 02/2025

- Designed a sustainable agriculture solution combining aeroponics, bioengineered microbial nutrients, and AI-powered monitoring.
- Integrated real-time IoT sensors, ultrasonic pest control, and computer vision for fruit detection and maturity analysis.
- Achieved a projected ROI of 128.57%.

1st Place - NRTF Hackathon with DHAWWINI Solution, IEEE RAS INSAT 04/2024

- Developed an energy innovation integrating mobile solar panels and an AI-controlled turbine.
- Designed the solution to meet the energy needs of non-electrified urban areas, providing a reliable power supply.

Skills

Technical skills:
TensorFlow, Keras, PyTorch, Scikit-learn, Pandas, NumPy, Jupyter Notebook, Flask, Docker, n8n

AI/ML Tools & Libraries:
Machine Learning, Deep Learning, NLP, Computer Vision, Predictive Modeling, Hugging Face Transformers, OpenCV, LSTM, AI Agents, Rasa, Android Studio

Development & Engineering Tools:
Python, C, Dart, Java, SQL, Git, SolidWorks, Docker, Apache Spark, Airflow, n8n

Core Skills:
Problem Solving, Data Analysis, Feature Engineering, Communication, Project Management, Workflow Automation

Certificates

Certificate in Machine Learning Specialization (from Coursera)

Certificate in Agile Scrum Methodology (from The Way Center)

Certificate in Computer Vision for Industrial Inspection from NVIDIA

Certificate in Mechanical Design: CSWA-Mechanical Design (from Dassault Systemes)