



Hanen Louati

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Summary

I am passionate about algorithms, programming, and software development. I am a dedicated worker, a quick learner, and an excellent communicator. I constantly seek new and challenging opportunities to grow and apply my skills.

Education

NATIONAL ENGINEERING SCHOOL OF SFAX (ENIS), Bachelor's degree in computer science Sep2021 – May2024

- GPA: 3.8/4.0
- **Courses:** Algorithms and Data Structures, AI, Machine Learning, Optimization, Computer Vision, Natural Language Processing, Databases, Cloud Computing, IoT, Blockchain, DevOps, Web Development, Object-Oriented Programming, Business Intelligence, Problem Solving, Cyber Security, Software Testing

PREPARATORY INSTITUTE FOR ENGINEERING STUDIES OF SFAX (IPEIS), Maths and Physics Sep2019 – June2021
preparing for the national exam for entry to engineering schools

- **Courses:** Mathematics, Linear algebra, Physics, Chemistry, Mechanics

Experience

Software Developer, CMCC – Lecce, Italy March 2025 – Current

- Developed and maintained climate simulation models, pre/post-processing tools, and shared libraries for data validation/visualization, improving research efficiency.
- Automated failure tracking and recovery in simulation chains, reducing downtime and enhancing reliability.
- Generated performance reports and diagnostics to support data-driven decision-making.

Machine Learning Researcher, University of winnipeg – winnipeg, Canada July2024 – Feb2025

- Integrated the datasets processed with NFStream to identify unusual patterns in network traffic like DDos, Bot and PortScan
- Performed data processing and EDA, including cleaning, transformation, and feature extraction for model readiness.
- Implemented various classification models, including KNN, logistic regression, decision trees, Naive Bayes, Random Forest, XGBoost, voting classifiers, and neural networks.
- Enhanced model accuracy and reliability by 25% through evaluation and optimization techniques, including hyperparameter tuning, model selection, and addressing class imbalance using oversampling methods such as SMOTE.

Automotive Security Protocols Testing Intern, Primatec – Sfax, Tunisia Feb 2024 – June 2024

- Developed a Python desktop app for analyzing **IPsec** and **MACsec** protocols in automotive network traces.
- Automated detection of security vulnerabilities, improving network security testing.
- Assisted senior engineers with testing and extracting databases using the **Jira REST API**.
- Streamlined bug tracking and reporting, reducing duplicate tickets through Jira integration.

Mobile Developer Intern, Telnet – Sfax, Tunisia July2023 - Aug2023

- Enhanced the existing payment application by integrating a feature that converts images to text-to-speech using Flutter.
- Integrated PIL library, pytesseract for OCR, Pillow, cv2 for image processing
- Enhanced financial access for the deaf community, resulting in a 50%

AI for Healthcare Intern, Clinisys – Sfax, Tunisia july2022 - Sep2022

- Developed a convolutional neural network (CNN) model to classify breast cancer histopathology images, resulting in a substantial improvement in diagnostic accuracy and contributing to more reliable cancer assessments.
- Designed and implemented an advanced machine learning pipeline for detecting diabetic retinopathy in retinal images using TensorFlow and Keras, facilitating early diagnosis and enhancing treatment planning for at-risk patients.

Full Stack Web Developer Intern, PivaSoftware – Sfax, Tunisia May2022 - July2022

- Developed a task management application using Angular, Spring Boot, and PostgreSQL, applying SOLID principles and clean

architecture for maintainability

- Automated builds and deployments with Maven, Jenkins, GitLab CI/CD, deploying on Azure with Docker and Kubernetes for scalability, and implementing secure authentication with Spring Security and SSL/TLS.

Projects

E-Commerce Order Cancellations

- Analyzed post-planning e-commerce order cancellations to identify influencing factors.
- Developed and evaluated various binary classification models to predict cancellations.
- Executed feature engineering and hyperparameter tuning (Optuna) for enhanced model performance.

Document Clustering for Topic Discovery

- Performed document clustering using K-Means to discover topics in a text corpus.
- Preprocessed data with TF-IDF vectorization and visualized clusters using PCA/t-SNE.
- Interpreted and labeled clusters based on key terms and evaluated performance with Silhouette Score.

Waste Detection

- Developed a computer vision model using Roboflow and YOLOv8 for detecting and classifying waste items.
- Achieved 85% precision and 92% accuracy in identifying six classes of waste materials: paper, plastic, glass, cardboard, metal and non-recyclable.

Automatic Email Response System using LLaMA

- Developed an automatic email response system that utilizes the LLaMA model to generate contextually relevant replies to incoming emails. Integrated with an email server for seamless message handling, the system features customizable response templates and a feedback mechanism to continuously enhance response accuracy.

Comprehensive Laboratory Management System

- Tools used: JAVA, Spring Boot, Maven, Git, Docker, Kubernetes, PostgreSQL, JUnit, Selenium, Jenkins

E-commerce Website:

- Tools used: PHP, MYSQL, HTML, CSS

Gas detector system

- Designed and implemented a gas detection system using Arduino Uno, ESP8266, and MQ2 gas sensor.

Real-time Location Tracking System Development

- Designed and implemented a real-time location tracking system using Java and WebSockets.

Activities

Chairwoman of the Robotics and Automation Society in IEEE ENIS Student Branch

Organizer of "PYFAC": Pitch Yourself For A Career ,an IT companies Forum

Event Manager at Microsoft Tech Club (MTC)

Challenger in a blockchain hackathon at NMTC (National Microsoft Tech Camp)

Skills

Programming: Python, Matlab, C/C++ , Java/JEE, HTML/CSS, JS

Mathematics: Statistics, Probability, Optimization, Operational Research, Numerical analysis, Graph Theory

Data Analysis and Visualization Tools: Numpy/Scipy, Pandas, Matplotlib, Plotly, Dash, OpenCV, TensorFlow, Keras

Software: .NET, Microsoft SQL Server, XCode, Interface Builder

Unix/Linux: Bash scripting

Database Manipulation: MySQL, PostgreSQL, SQLite, Oracle XE, MongoDB

Soft Skills: Problem-solving, Critical thinking, Communication, Teamwork, Time management

Interests

Gym, painting, traveling, reading, human-robot interaction.

Languages:

- Arabic: Native
- English: Advanced
- French: Advanced
- Italian: Beginner

Certificates:

- Microsoft Azure Fundamentals Certificate –2023
- Data Analyst Career Track, DataCamp –2024
- Launching Into Machine Learning, DataCamp –2024
- Certificate of appreciation at IEEE IWCMC 2025 conference