

Sola Achref

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SUMMARY

Machine Learning Engineer with strong foundation in deep learning, computer vision, and NLP. Proven ability to architect and deploy production ML systems using modern MLOps practices.

SKILLS

- **Programming:** Python, SQL, Java, JavaScript
- **Machine Learning & AI:** Scikit-learn, XGBoost, Random Forest, PyTorch, TensorFlow, CNNs, LSTMs, NLP, Transfer Learning
- **Frameworks & Libraries:** React, Node.js, Express, Flask, FastAPI
- **Databases:** PostgreSQL, MySQL, MongoDB
- **Data Engineering & MLOps:** Apache Airflow, Docker, Kubernetes, Jenkins, Linux, Cloud (AWS S3, EC2; Azure)
- **Collaboration Tools:** Git, Jira, Agile/Scrum

PROFESSIONAL EXPERIENCE

Tunisian United Solution - Sousse | Machine Learning & Data Engineer Intern

Feb 2025 - Jun 2025

Project : Customer Churn Prediction & Segmentation System.

- Built a churn prediction system using **XGBoost** (92% accuracy) and segmented customers with **K-Means/K-Prototypes** (silhouette score 0.86).
- Automated **ETL workflows** with Apache **Airflow** pulling from OData endpoints and private APIs.
- Containerized ML pipeline with **Docker** for reproducible deployment on cloud-based **Linux** VMs.
- Integrated outputs into **ERP** systems via **REST APIs** and reduced churn risk by 15% during pilot phase.
- Developed interactive dashboards using Chart.js to visualize churn probabilities, cluster profiles, and customer trends for business stakeholders.

Lab-IT - Sousse | Deep Learning Intern

Jun 2024 - Aug 2024

Project : Smart Parking System using Deep Learning

- Developed a **CNN model** to classify parking spots as occupied or free using camera feeds achieving **93% accuracy**.
- Applied **data preprocessing and augmentation** (rotation, brightness, contrast) to ensure robust predictions under varying lighting and angles.
- Built a **REST API** with **FastAPI** for real-time parking availability detection with <200ms response time.
- Integrated hardware deployment using IP cameras and edge devices (Raspberry Pi) for on-site inference.
- Containerized application with **Docker** to create a **production-ready smart parking system**.
- Implemented real-time dashboard displaying parking occupancy status and availability trends.

VISTO - Sousse | Data Science Intern

Jun 2023 - Jul 2023

Project : Predictive Maintenance – Manufacturing Analytics

Developed a predictive maintenance system to anticipate equipment failures and reduce downtime.

- Collected and integrated machine sensor and operational data from multiple sources.
- Cleaned, normalized, and engineered features to improve model performance using Python (**pandas**, **NumPy**).
- Conducted exploratory data analysis (**EDA**) to identify failure patterns and key predictive signals.
- Built and **fine-tuned** predictive models using **Random Forest** and **LSTM** for time-series failure prediction.
- Visualized predictive insights and failure probabilities through interactive dashboards

ACADEMIC PROJECTS

MLOps Workflow Automation

Developed an automated ML workflow for a products demand forecasting system to optimize inventory management

Orchestration: Built an automated ML pipeline that retrains and deploys models using Apache Airflow.

Containerization & Deployment: Containerization with Docker, and deployment to Azure Kubernetes Service

Key words: Airflow, Docker, Azure

Grammar and Spelling Correction Web App

Developed a grammar and spelling correction web app using a fine-tuned T5 model with the AdamW optimizer for improved accuracy.

Backend: developed with flask, handled real-time inference

Frontend: React based frontend ensured seamless user interaction and optimized performance.

Key words: Python, PyTorch, HuggingFace, Transformers, Flask, React

Car Price Gap Predictor

Built a machine learning model to predict price differences between new and used cars of the same brand and model with

92% accuracy. Scrapped 30 features, cleaned and processed data, and used Random Forest for accurate predictions.

Key words: Python, Scrapy, playWright, Pandas, Scikit-learn, Random Forest

EDUCATION

Polytechnic School, Sousse

Sep 2022 - Jul 2025

- Engineering Degree in Computer Science

Higher Institute of Applied Sciences and Technology, Sousse

Sep 2019 - Jul 2022

- Bachelor's Degree in Computer Science

CERTIFICATIONS

- IT Specialist – Python | Certiport
- IT Specialist – Databases | Certiport
- Databricks Lakehouse Fundamentals | Databricks
- Oracle Cloud Infrastructure AI Foundations Associate | Oracle
- DELF – B2 | France Éducation International
- TOEIC – B2 | ETS (Educational Testing Service)

LANGUAGES

English - French - Arabic