

Mohammed El Barhichi

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EDUCATION

Engineering Degree in Artificial Intelligence Engineering

CentraleSupélec

Sep 2024 – present

Exchange Semester

ESSEC Business School

Jan 2024 – May 2024

Engineering Degree in Data Science

Ecole Centrale Casablanca

Sep 2024 – Jan 2024

Advanced Studies in Mathematics, Physics, and Engineering Science

Classes Préparatoires aux Grandes Ecoles d'Ingénieurs

Sep 2020 – Aug 2022

SKILLS AND LANGUAGES

Data Science: Python, Scikit-Learn, Pandas, Numpy, Matplotlib, Seaborn, Pytorch, Keras, TensorFlow, LangChain, R.

Software: Dart, C, C++, Git, VBA, SQL, AWS, GCP, PowerBI, OOP.

Soft Skills: Problem Solving, Design Thinking, Leadership, Analytical Thnking, Teamwork, Creativity, Curiosity, Agility.

Languages: English (TOEIC C1), French (DALF C1), Arabic.

CERTIFICATES

DeepLearning.AI : DeepLearning Specialization ☑

IBM : Data Science Professional Certificate ☑

DeepLearning.AI : Natural Language Processing Specialization ☑

Google Project Management ☑

EXPERIENCES AND PROJECTS

Intent Detection Project for a Tourism Chatbot ☑

Oct 2024 – present

Illuin Technology

- Implemented multiple approaches, including zero-shot classification, TF-IDF and embeddings with traditional classifiers, and **fine-tuning** pre-trained models, to develop an intent detection system.
- Achieved a 98% score using a customized evaluation metric balancing F1-macro and key metrics for critical intents.
- Skills required : Fine-Tuning, **Transformers**, CamemBert Zero-Shot Classification, SVM, Random Forest, XGBoost.

Welding Quality Prediction Project ☑

Oct 2024

CentraleSupélec

- Developed predictive models to assess welding quality based on mechanical and process parameters from multivariate datasets.
- Proposed and implemented both supervised (PCA-based and feature-engineered) and semi-supervised (**self-training**) approaches to address missing data (Imputation) and target variability.
- Achieved state-of-the-art results using Boosting models, validated through cross-validation and hyperparameter optimization.

Data Science & AI Consultant

Apr 2024 – Sep 2024

E-volucionaria by Intelcia

- Designed and developed personalized chatbots based on Retrieval-Augmented Generation (**RAG**) architecture for two major clients (demo ☑).
- Implemented advanced techniques to enhance the chatbot's comprehension by applying Semantic Chunking, History-Aware Retriever, Multi-Query Retriever and Query-Decomposition, achieving 87% score in **answer relevancy**.
- Skills required : LLMs, **LangChain**, Azure, OpenAI, Claude, Embedding, Streamlit, LangSmith.

Virtual Guidance Assistant Project based on Graph-RAG ☑

Aug 2024

ThinkAI Hackathon

- Implemented a RAG-based chatbot for academic and career guidance for high school and university students, featuring an advanced chunking strategy and a graph-based approach using **Neo4j** structuresto enhance recommendation accuracy.
- Skills required : LLM, Graph-Vector, Streamlit, Chatbot, POC.

Anomaly detection and Heart crisis prediction Project

Sep 2023 – Jan 2024

H'ArtNov

- Built a data flow architecture in Amazon Web Services (AWS), focusing on integrating advanced data processing into smartwatches using **Apache Spark**.
- Integrated cardiac anomaly detection and heart crisis prediction models into Amazon **SageMaker**, yielding results with a specificity and sensitivity exceeding 96%.

Recommender System based on GAN Project ☑

Sep 2023 – Jan 2024

Ecole Centrale Casablanca

- Proposed a new model for recommendation systems based on Generative Adversarial Networks (**GANs**) and Matrix Factorization.
- Published a scientific article presenting our model's results, surpassing the performance of existing collaborative filtering models across all evaluation metrics.

Facial Emotion Recognition Project ☑

Oct 2023

Ecole Centrale Casablanca

- Developed and deployed a facial emotion recognition application designed to analyze and detect emotions from facial expressions in real-time. Leveraged **CI/CD** technologies to ensure scalability, monitoring, and seamless integration for production use.
- Skills required : TensorFlow, **MLOps**, CI/CD, FastAPI, OpenCV, Docker, Grafana, Computer Vision, GitHub Actions.

Data Scientist

Jun 2023 – Sep 2023

Africa Verify

- Developed and implemented an automated data extraction approach based on **NLP**, achieving a 95% time-saving in daily tasks.
- Skills required : BeautifulSoup, Selenium, Natural Language Processing (NLP), Named Entity Recognition (**NER**) , NLTK, Gradio.

Protein Localization Prediction Project ☑

Mar 2023

Ecole Centrale Casablanca

- Built a predictive model for protein cellular localization sites on an **imbalanced dataset**.
- Augmented the data using to address imbalance issues, achieving 96% accuracy.