Mohammed El Barhichi

AI Engineering student seeking for a 6-month end-of-studies internship starting May 2025

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EDUCATION

Master's Degree in Artifical Intelligence Engineering
CentraleSupélec
Sep 2024 – present

Exchange Semester
ESSEC Business School
Jan 2024 – May 2024

Bachelor's Degree in Engineering Science
Ecole Centrale Casablanca
Sep 2022 – Jan 2024

Advanced Undergraduate Studies in Mathematics, Physics, and Engineering
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 : DeepLearning Specialization
Google Project Management

PROFESSIONAL EXPERIENCE

Data Science & AI Consultant Apr 2024 – Sep 2024
E-voluciona by Intelcia
- Designed and developed personalized chatbots based on Retrieval-Augmented Generation (RAG) architecture for two major clients.
- 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.
- LLMs, LangChain, Azure, OpenAI, Claude, Embedding, Streamlit, LangSmith.

Co-Founder & CTO Jan 2024 – Aug 2024
H'ArtNov
- Collaborated with cardiologists to develop advanced cardiac anomaly detection and crisis prediction models, achieving 95% sensitivity and 92% specificity.
- Designed a connected application for smartwatches, providing real-time monitoring and communication with healthcare professionals, ensuring informed decision-making and personalized care.

Data Scientist Jun 2023 – Aug 2023
Africa Verify
- Proposed and implemented an automated data extraction approach based on NLP, achieving a 95% time-saving in daily tasks.
- BeautifulSoup, Selenium, Natural Language Processing (NLP), Named Entity Recognition (NER) , NLTK, Gradio.

PROJECTS

Intent Detection for a Tourism Chatbot
- 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.
- Transformers, Fine-Tuning, CamemBert Zero-Shot Classification, SVM, Random Forest, XGBoost.

Virtual Guidance Assistant based on Graph-RAG
- 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.
- LLM, Graph-Vector, Streamlit, Chatbot, POC.

Recommendation System based on GAN
- 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
- 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.
- MLOps, TensorFlow, CI/CD, FastAPI, OpenCV, Docker, Grafana, Computer Vision, GitHub Actions.

Welding Quality Prediction
- 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.

Protein Localization Prediction
- Built a predictive model for protein cellular localization sites on an imbalanced dataset.
- Data augmentation to address imbalance issues, achieving 96% accuracy.
- KNN, SVM, Random Forest, XGBClassifier, Logistic Regression, Naive Bayes, Data Augmentation, SMOTE, RandomOverSampling.