RAHMA BEN MBAREK

Data Scientist - AI Engineer

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Summary

AI-focused Data Scientist with a solid background in Applied mathematics and machine learning, skilled in developing Python-based data-driven solutions.

Education

Research Master's in Applied Mathematics with a specialisation in Data Science, Actuarial Science, and Stochastic Control — Sept 2022 – Jan 2025
Faculty of Sciences of Tunis

Licence in Applied Mathematics with a specialisation in Data Science — Sept 2019 – Jun 2022
Faculty of Sciences of Tunis

Professional Experiences

End-of-Study Master Thesis Intern — Feb 2024 – Jul 2024

Project: Predicting the Directional Movement of the Tunisian Stock Market Index Using ANNs and SVMs

BH BANK

- Developed predictive models using Artificial Neural Networks and Support Vector Machines
- Engineered features from historical stock data
- Preprocessed time-series data and optimized hyperparameters for improved accuracy

End-of-Study Licence Intern — Mar 2022 – May 2022

Project: Market research and credit risk management

QNB BANK

- Assisted in credit decisions and created amortization schedules for personal and professional loans.
- Handled banking operations: cards, deposits, withdrawals, and transfers.
- Analyzed 10 unpaid loans post-COVID, segmented clients, and diagnosed 4 defaulted cases.

Projects

Project: AI-Based Research Paper Analyzer & RAG Q&A System — Ongoing

- Exploring methods to extract and process text from multi-format research documents (.docx, .pdf, .csv, .xlsx).
- Experimenting with vector embeddings, retrieval-augmented generation (RAG), and LLM-based summarization and translation.
- Handling multilingual documents and structured data (tables/charts) with creative NLP techniques.
- Skills applied: Python, NLP, LLMs, embeddings, vector databases, text summarization, multilingual processing.

Project: Fraud Prediction Using Logistic Regression

- Used logistic regression to predict fraud; handled data preprocessing and feature selection
- Programming language: R

Project: Eigenvalue Problems and Their Application to the Theory of Vibrations

- Focused on eigenvalue problems and their relevance to vibration theory in mechanical systems.

Project: Extraction and Analysis of Opinions on COVID-19 Vaccines Using the 'Facebook' Platform

- Used Facepager to collect public Facebook data related to COVID-19 vaccines.
- Analyzed vaccine opinions.

Social Activities

IndabaX Tunisia Hackathon: SUP'COM 2024

- Participant – AI for Dental Diagnostics: Object Detection Challenge

CREMMA: School and Workshop on Biomathematics 2023

- Dynamic Population: Stochastic Analysis and Application Laboratories.

FST Hackathon 3.0 2022

- Participant – AI for Real Estate Price Prediction in Tunisia

Technical Skills

- **Statistical Analysis:** Inferential Statistics, Stochastic Calculus, Probability Theory, Financial Mathematics
- **Optimisation Techniques:** Linear and Non-linear Optimisation, Gradient-Based Methods
- **Programming Languages:** Python (SciPy, Scikit-learn, TensorFlow, yfinance, etc.), R
- **Data Visualization**: Power BI, Matplotlib, Seaborn
- **Machine Learning & AI**: Supervised and Unsupervised Learning, Deep Learning

Languages

- Arabic – *Native*
- French – *Intermediate*
- English – *Upper Intermediate*