MAGDOUL Zakaria

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Education

2024-2025 **Ecole Polytechnique (l'X)**

Degree	Master 2 : Dea El karoui - Probability and Finance , Given at Sorbonne University
Courses	Advanced Stochastic Calculus, Optimal Stochastic Control, Financial Derivatives : Stochastic-Modeling, Model Calibration: Local and Stochastic Volatility, Numerical Probability (MC)

ENS Paris-Saclay

Degree	Master 2 : MVA - Mathematics, Machine Learning and Computer Vision
Courses	Statistical Learning , Time Series Learning, Deep Learning , Reinforcement Learning

2022-2024 **Sorbonne Université** *(Campus Marie et Pierre Curie)*

Degree	Master 1 Applied Mathematics and bachlor's degree
Grade	Rank 1 / 273: 18.21/20 Scholarship Offer
Courses	Stochastic Calculus and Control, Statistics, C++, PDEs, Advanced Probability

2020-2023 **École des Mines Nancy** *Engineering School*

Major	Data Science
Courses	Python, SQL, R, C++, VBA, PDEs, Monte Carlo Methods, Deep Learning, Machine Learning

2018-2020 **Preparatory Class for Engineering Schools** (CPGE Mohammed V - Casablanca)

Diploma	MPSI - MP*
Remarks	Hi

Professional Experience

June 2024 – August 2024 | **Quantitative Capital Modeling** - Addactis France, *Paris, France*

- Led the interest rate curve extrapolation project to comply with the 2020 review of Solvency II.
- Modeled assets and liabilities to assess exposure under different scenarios.
- Developed various capital modeling solutions (ALM, Solvency 2, ICS, SBR, etc.) on Addactis Modeling.
- Suggested and implemented the automation of the validation process for new model changes, completely eliminating operational risks.

June 2023 – August 2023 | **Quantitative Analyst** - BMCE Capital, *Casablanca, Morocco*

- Priced derivatives using stochastic volatility models , Monte carlo and pde solutions.
- Plotted volatility smiles and implied distributions for forex and equity options using the Bloomberg terminal.
- Back-tested strategies, conducted portfolio analysis .

May 2022 – September 2022 | **Data Scientist - Machine Learning** - Laboratoire Université de Lorraine, *France*

- Worked on a project for the Lorraine City Hall (Mairie) , where I designed and developed a document classification pipeline to process 50,000+ documents, using OCR for text extraction from PDFs and TF-IDF vectorization .
- Trained and optimized a Random Forest classifier to categorize documents into classes (Id's, Passeports, etc), achieving 92 percent accuracy by tuning hyperparameters via grid search.
- Handled multilingual documents by building separate models for French and non-French documents, applying word embeddings (Word2Vec) to capture semantic relationships.

Honors and Scholarships

June 2024 **PGSM Excellence Scholarship** *(Awarded by the Fondation Sciences Mathématiques de Paris)*
June 2023 **Excellence Scholarship** *(Awarded by the Bézout Graduates Program (declined it))*
2020-2022 **Grandes Écoles Scholarship** *(Awarded by the OCP Foundation)*

Projects

- (2024) Designed and implemented a paper trading bot , using real-time market data from Alpha Vantage's API to execute a momentum-based trading strategy.
- (2021) Stochastic models in finance: refined the stochastic CIR model using the alpha-CIR approach, supervised by Dr. Madaline Deaconu.

Skills

Skills	**Python** : Competetive Programming ,Proficient in Pandas, SciPy, NumPy, Matplotlib **C++**: Competetive Programming , Extensive Experience with Monte Carlo Pricing
Certifications	**Financial Markets** :Yale University , **DeepAI** : Neural Networks and Deep Learning **JP Morgan** :Quantiative Research Certification
Languages	English: Fluent *(C2 level, IELTS)* - French: Bilingual - Arabic: Bilingual
Technical Tools	**Git , LATEX , MS Excel , MS PowerPoint**