

MAME DIARRA TOURE

PhD Candidate in Mathematics and Statistics
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EDUCATION

McGill University, Montréal, Canada

Fall 2022 – Present

PhD Candidate in Mathematics and Statistics

- **Research:** Scalable Low-Rank Bayesian Neural Networks for Uncertainty Quantification.
- **Award:** Mila Excellence Scholarship Women in AI (2024).

University Paris-Saclay, France

2019 – 2021

MSc in Quantitative Finance – First Class Honours (Ranked Top 5%)

- **Thesis:** Quantification of Clearing House Exposure: Modeling Clearing Member Default Fund Contributions.
- **Award:** Sophie Germain Excellence Scholarship (Jacques Hadamard Mathematics Foundation).

ENSIIE (Grande École), France

2018 – 2021

Engineering Degree in Applied Mathematics & Computer Science

- Relevant Coursework: Stochastic Calculus, Numerical Analysis, Machine Learning, Optimization.

University Paris-Saclay

2018 – 2019

BSc in Mathematics – First Class Honours

- Double degree program completed concurrently with ENSIIE engineering studies.

Classes Préparatoires aux Grandes Écoles (Lycée Saint Charles)

2016 – 2018

Intensive 2-year preparation in Advanced Mathematics and Physics (MPSI/MP)

- Successfully passed National Competitive Entrance Exams (Concours) for top Engineering Schools.

RESEARCH & PROJECTS

Scalable Bayesian Deep Learning (PhD Research)

Developing novel Low-Rank Variational Inference methods to reduce BNN parameter complexity from $\mathcal{O}(n^2)$ to $\mathcal{O}(n)$. Implementing custom variational layers in TensorFlow to enable rigorous uncertainty quantification in large-scale architectures.

High-Dimensional Derivative Pricing (Natixis/Master's Project)

Applied Deep Learning to solve high-dimensional PDEs for Credit Valuation Adjustment (CVA), addressing the curse of dimensionality inherent in traditional finite difference methods.

Startup-Investor Matchmaking Algorithm (JACOB)

Designed a Collaborative Filtering recommender system to connect startups with investors. Solved data sparsity challenges using user-item similarity measures to improve recommendation accuracy.

Budget Pacing Optimization (JACOB)

Formulated and solved a budget allocation problem using Reinforcement Learning, optimizing advertising spend under strict constraints.

PROFESSIONAL EXPERIENCE

JACOB (Center for Applied AI), Montréal

May 2022 – July 2024

Applied Research Scientist

- Contributed to R&D projects in NLP and Reinforcement Learning, translating theoretical models into deployed industrial solutions.

J.P. Morgan (Quantitative Research Mentorship)

Summer 2023

Mentorship Program Participant

- Selected for exclusive mentorship providing in-depth exposure to quantitative research methodologies, financial modeling, and global markets.

Société Générale, France

Nov 2021 – Feb 2022

Quantitative Analyst (Haussmann Project)

- Developed PD (Probability of Default) and LGD (Loss Given Default) models for low-default portfolios.

BNP Paribas (Global Markets), France

May 2021 – Oct 2021

Quantitative Analyst Intern – Stress Testing Methodologies

- Developed mathematical models to quantify exposure to Central Counterparty Clearing Houses (CCPs).
- Modeled default fund contributions using Monte Carlo simulations.

LaMME (Laboratory of Mathematics), France

Summer 2019

Research Intern – Rough Volatility

- Implemented kernel estimation techniques for Volterra processes to model Rough Volatility in financial markets.

SKILLS & INTERESTS

Programming: Python (PyTorch, TensorFlow, NumPy, Pandas), C++, R, SQL

Mathematics: Stochastic Calculus, Linear Algebra, Bayesian Modeling, Numerical Optimization

Languages: French (Native), English (Fluent), Wolof (Native)

Interests: Chess, Crosswords, Reading, Running, Weightlifting