

**High Potential Individual (HPI) visa holder:** United Kingdom work permit (Dec 2022 - Dec 2024)

## EDUCATION

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### University Paris Dauphine - Paris Sciences & Lettres (PSL)

Paris, France

*Master 2, Mathematics Research Master's degree – MASEF – Stochastic Calculus Major*

2022

*Courses: Stochastic Calculus, Optimal Stochastic Control, Monte Carlo & Finite Difference Methods, Jump Processes, Mean Field Game Theory, Machine Learning*

*Master's thesis: "Deep Learning Rough Volatility & Deep Calibration of Rough Stochastic Volatility Models", supervisor Paul Gassiat*

*Research projects:*

- "Multilevel Monte Carlo Path Simulation", Giles (2008)
- "Hybrid scheme for Brownian Semistationary Processes", Bennedsen, Lunde, Pakkanen (2017)
- "Deep Learning (rough) Volatility", Horvath, Muguruza, Tomas (2019)
- "Deep Calibration of Rough Stochastic Volatility Models", Bayer, Stemper (2019)
- "Deep Hedging Under Rough Volatility", Horvath, Teichmann, Zuric (2021)
- "Turbocharging Monte Carlo Pricing of the Rough Bergomi Model", McCrickerd, Pakkanen (2018)

### University Paris Dauphine - Paris Sciences & Lettres (PSL)

Paris, France

*Master 1, Mathematics – Statistics Major*

2020

*Courses: Discrete Stochastic Processes, Poisson Processes, Stochastic & Ordinary Differential Equations, Generalized Linear Models, Convex & General Optimization, Nonparametric Statistics, Statistical Learning Theory, Monte Carlo Methods, Time Series Analysis*

*Master's thesis: "Correlation Between Toponymy and Geography of French Municipalities" (Implemented in R), supervisor Robin Ryder*

*C++ project: Vector, Matrix & Tensor classes implementation*

### University Paris Dauphine - Paris Sciences & Lettres (PSL)

Paris, France

*Bachelor of Science, Mathematics – Probability Theory Major*

2019

*Courses: Lebesgue Integration & Measure Theory, Topology, Functional Analysis, Hilbert Analysis, Advanced Calculus & Optimization, Probability III, Linear Algebra III, Analysis III, Mathematical Statistics, Statistical Modelling, Differential Equations*

*Python project: Double Pendulum Chaos Motion*

*R project: Random Variables Simulation Methods, Variance Reduction Methods*

### University of Greenwich

London, United Kingdom

*Master of Science, Banking & Finance (Distinction)*

2016

*Master's thesis: "Political Risk & Foreign Exchange Market: an Exploration of the Brexit Impact on the Sterling", supervisor Lianfeng Quan*

## RESEARCH PROJECTS

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### Multilevel Monte Carlo Path Simulation *supervisor Julien Claisse, CEREMADE*

*Implemented with Python the Multilevel Monte Carlo method and reproduced Michael B. Giles' results*

- Multilevel Monte Carlo improves the classic Monte Carlo method by reducing the computational complexity
- For a same level of precision, the multilevel method runs 10 to more than 1000 times faster
- Implemented Black-Scholes and Heston models, Milstein and Euler discretization schemes

### Deep Learning Rough Volatility & Calibration of Rough Stochastic Volatility Models *supervisor Paul Gassiat, CEREMADE*

*Implemented with python, neural networks trained to learn the map from implied volatility surfaces to rough Bergomi parameters and from rough Bergomi parameters to implied volatility surfaces*

- The model is precise with an average relative error of 1.15% for calibration, 0.5% for volatility surface
- Hybrid Scheme implemented to generate rough Bergomi paths, Turbo Charging Monte Carlo for faster/precise implied volatilities

### Deep Hedging Under Rough Volatility *supervisor Pierre Ablin*

*Produced hedging strategies using neural networks and rough volatility models*

- Performs as precise as stochastic models' hedging
- Simulation of fractional Brownian motion with circulant method: Wood & Chan (1994), rough Bergomi model implemented

### Web Scraping / Message Automation

*Implemented with Python automations to increase my job search reach*

- Messaged (via LinkedIn/Gmail) over 5000 people filtered with information available on their LinkedIn profile
- Improved response rate from 1% to 10% using time/message/request strategies
- Randomized actions and set weekly/daily limits to prevent my accounts from being reported/banned from platforms

### Correlation Between Toponymy and Geography of French Municipalities *supervisor Robin Ryder, CEREMADE*

*Implemented with R regression/classification models to predict longitudes/latitudes/regions of French cities using their toponymy*

- 3 regions show impressive predictive components in their names with errors of region classification below 7%

## SKILLS

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**Programming :** Python (Advanced, Numpy, Pandas, PyTorch), C++ (Basic), LaTeX

**Leetcode :** 425 Solved Problems, 255 Medium, 124 Easy, 46 Hard

**Esport:** Mobile Legends (100 million active players): Luo Yi Champion, 293 World Rank, Top 10 France, 1<sup>st</sup> Paris

**Language:** French (Mother tongue), English (Fluent), Persian (Intermediate), Spanish (Intermediate)