

## EDUCATION

### University Paris Dauphine-PSL

Paris, France

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

2022

*Master's thesis: "Deep learning rough volatility and deep calibration of the rough Bergomi model", supervisor Paul Gassiat**Research projects:*

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

### University Paris Dauphine-PSL

Paris, France

*Master 1, Mathematics – Statistics Major*

2020

*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-PSL

Paris, France

*Bachelor of Science, Mathematics – Probability Theory Major*

2019

*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 and foreign exchange market: an exploration of the brexit impact on the sterling", supervisor Lianfeng Quan*

### Waterford Institute of Technology

Waterford, Ireland

*Erasmus, Economy*

2014

## RESEARCH PROJECTS

### Deep Calibration Of Rough Stochastic Volatility Models

2021

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

- The model is precise with an average relative error of 1.15%
- Hybrid Scheme implemented to generate rough Bergomi paths

### Deep Learning (rough) Volatility

2021

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

- The model is precise with an average relative error of 0.5%
- Turbo Charging Monte Carlo implemented to allow faster simulation and more precise implied volatility surfaces

### Multilevel Monte Carlo Path Simulation

2021

*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 Hedging Under Rough Volatility

2021

*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

2022

*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
- Collected and saved information from contacts to allow follow ups
- Randomized actions and set weekly/daily limits to prevent my accounts from being reported/banned from platforms

### Algorithmic Trading

2022

*Implemented with Python mean reversion strategies following Ernest P. Chan "Algorithmic Trading"*

- Johansen Test and Cointegrated Augmented Dickey-Fuller Test (CADF) to identify potential assets for cointegration
- Automated the data cleaning process and mean reverting/stationary tests (Estimation of Hurst exponent, ADF, Variance ratio test)

## SKILLS

**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)