

## 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**Python projects:*

- *American, European Options, and Worst-Of Autocallables Pricing, using Monte Carlo and Finite Difference Methods.*
- *Asian, Lookback, and Digital Options Pricing, using: "Multilevel Monte Carlo Path Simulation." Michael B. Giles, Oxford Man Institute of Quantitative Finance. (2008)*
- *Neural Networks Hedging under Rough Bergomi model: "Deep Hedging Under Rough Volatility" Horvath B. Teichmann J. Zurich Z. (2021)*

### 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*

### IPAG Business School

Paris, France

*Master 2, Financial Markets*

2015

### Waterford Institute of Technology

Waterford, Ireland

*Erasmus, Economy*

2014

## RESEARCH PROJECTS

### Algorithmic Trading

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

2022

- *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)*

### 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*

### Worst-Of Autocallable

2021

*Implemented with Python a 2 assets worst-of autocallable pricer (Eurostoxx50 & CAC40)*

- *Each asset has its own coupon value, its own paying and redemption barriers*
- *Used historical correlation, implied volatility, Black-Scholes model*

### 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*

### 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*

## SKILLS

**Programming :** Python (Advanced, Numpy, Pandas, PyTorch), C++ (Basic), LaTeX**Academic:** Stochastic Calculus, Monte Carlo Methods, Equity Derivatives, Black Scholes Model, Rough Volatility Model (rBergomi), Statistics, Neural Networks, Algorithmic, Data structures, Hedging, Pricing, Machine Learning, Volatility**Language:** French (Mother tongue), English (Fluent), Persian (Intermediate), Spanish (Intermediate)**Esport:** Mobile Legends (100 million active players): Luo Yi Champion, 293 World Rank, Top 10 France, 1<sup>st</sup> Paris