

EDUCATION

University Paris Dauphine-PSL

Paris, France

Master 2, Mathematics Research Master's degree –MASEF, Financial Mathematics Major

2020 - 2021

*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

2019 - 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 Major

2016 - 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)

2015 - 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

2011 - 2015

Waterford Institute of Technology

Waterford, Ireland

Erasmus, Economy

2013 - 2014

RESEARCH PROJECTS

Algorithmic Trading

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

2021 - 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

2020 - 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

2020 - 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

2020 - 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

2020-2021

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

2020-2021

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**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, 1st Paris