Thibaut Montes

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PROFESSIONAL EXPERIENCE

SENIOR MACHINE LEARNING RESEARCHER | Talkwalker

Mai 2021 - Now | Luxembourg, Luxembourg

Talkwalker is a Consumer Intelligence Acceleration platform for brands to drive business impact and revenue. I work in the **AI** & **Machine Learning** team responsible to extract information from raw data coming from social medias (text, images, podcasts, videos, etc). More specifically, I use deep neural networks in order to solve **NLP** related problems. Here are some examples of my projects:

- Train prediction models based on **pre-trained multilingual transformers models** for emotion and aspect-based sentiment analysis.
- **Active Learning** based training.
- Meta-Learning to improve classifiers accuracy.

DESK STRAT | Deutsche Bank

Sep 2020 - April 2021 | London, United-Kingdom

I worked on the Synthetic Desk's (ETFs and Indices) migration to Kannon (New P&L and Risk tool used by trading). My main tasks were:

- Improve PV and Risk computations.
- Automatize and stabilize pcf file upload for ETFs/Indices from different sources.
- Code optimization.

RESEARCH ADVISOR | The Independent Calculation Agent (ICA)

Nov 2016 - Mar 2020 | Paris, France

As a PhD candidate, I worked in collaboration with ICA on the following projects:

- Optimization of the analytic library using Optimal Quantization (Pricing of Exotic Options in the interest rate world).
- Identifying and *killing* bias in xVA computation using Multilevel Monte-Carlo methods.

INTERN | The Independent Calculation Agent (ICA)

May 2016 – Oct 2016 | Paris, France

Optimization of financial products pricing and risk measures sensitivities computations.

INTERN | LPSM | Sorbonne University (former Paris VI)

Jun 2015 – Jul 2015 | Paris, France

Simulation of short rate models using trinomial trees. The project can be accessed at the following link: **Trinomial Trees**.

EDUCATION

PHD IN NUMERICAL PROBABILITY | LPSM | Sorbonne University (former Paris VI)

Mar 2017 – Jun 2020

I was under the direction of **Gilles Pagès** and **Vincent Lemaire** at the LPSM and the supervision of **Jean-Michel Fayolle** at ICA.

During my PhD, I made contributions to the theoretical study and financial applications of **Optimal Quantization**, also known as K-means. I also had a keen interest for Multilevel Monte-Carlo methods and Stochastic Algorithms.

- First, I focused on the numerical optimization of the problem (fixed point search and gradient descent) in order to efficiently build such quantizers.
- Then, I applied this numerical method for the pricing of PRDC bermudan options or the study of a Stationary Heston model.

RESEARCH MASTER IN PROBABILITY AND FINANCE (with honors) | Sorbonne University (former Paris VI) in collaboration with École Polytechnique

Sep 2014 – Jun 2016

- Numerical Probability (Monte-Carlo, Sensitivities Computation, . . .).
- Stochastic Algorithms (Stochastic Gradient Descent, . . .).

- Machine Learning.
- Stochastic Calculus and Control.

BACHELOR DEGREE IN MATHEMATICS (WITH HONORS) | Aix-Marseille University
Sep 2011 – Jun 2014
Third year of the Bachelor on exchange with the ERASMUS program at Lund University's mathematics department, Lund, Sweden.

SCIENTIFIQUE BACCALAURÉAT (WITH HONORS) | Lycée Jules Viette, Montbéliard
Sep 2008 – Jun 2011
With Mathematics and Engineering speciality.

PUBLICATIONS

- Lemaire, V., Montes, T. and Pagès G. (2022) **Stationary Heston model: Calibration and Pricing of exotics using Product Recursive Quantization**. *Quantitative Finance*.
- Fayolle, J.-M., Lemaire, V., Montes, T. and Pagès G. (2021) **Quantization-based Bermudan option pricing in the FX world**. *Journal of Computational Finance*.
- Lemaire, V., Montes, T. and Pagès G. (2020) **New weak error bounds and expansions for optimal quantization**. *Journal of Computational and Applied Mathematics*, 2020.

SKILLS

PROGRAMMING

- **Python** (Huggingface, PyTorch, ONNX, NumPy, pytest, Pandas, Pybind11, ...)
- **C++** (Creation of some libraries during my PhD)
- Tools used daily: **Git** ◇ **Docker**
- Basics knowledge: **Java** ◇ **Scala** ◇ **Kafka** ◇ **MongoDB**

LANGUAGES

- **French**: native
- **English**: fluent