

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 models using **pre-trained multilingual transformers models** for aspect-based sentiment analysis or emotion prediction.
- ◇ **Meta and Active Learning** based training to improve classifiers accuracy when fewer labelled documents are available.

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 was to improve PV and Risk computations of ETFs and indices.

RESEARCH ADVISOR | THE INDEPENDENT CALCULATION AGENT (NOW OPENSEE)

May 2016 - Mar 2020 | Paris, France

First as an intern, then 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.

EDUCATION

PHD IN NUMERICAL PROBABILITY | LPSM | SORBONNE UNIVERSITY

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 (MASTER EL-KAROUI - WITH HONORS) | SORBONNE UNIVERSITY IN COLLABORATION WITH ÉCOLE POLYTECHNIQUE

Sep 2014 - Jun 2016

BACHELOR DEGREE IN MATHEMATICS (WITH HONORS) | AIX-MARSEILLE UNIVERSITY

Sep 2011 - Jun 2014

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 libraries during my PhD)
- ◇ Tools used daily: **Git** ◇ **Docker**
- ◇ Basics knowledge: **Java** ◇ **Scala** ◇ **Kafka** ◇ **MongoDB**

LANGUAGES

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