Maxime Rochkoulets

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Education

KU Leuven • Leuven, Belgium — September 2024 ∼ Now
Master of Science • *Computer Science*

Currently working on my master's thesis on Tensor Decompositions & Kolmogorov-Arnold Networks.

University of Bordeaux • Bordeaux, France — September 2021 – May 2024
Bachelor of Science • *Computer Science* — Rank: Top 10% | Grade: First Class

BSc obtained with honors, completed a two-semester exchange in Dublin during my third year.

High School • France — September 2018 – July 2021
French General Baccalaureate • *Mathematics, English, History & Political Sciences* — Obtained with honors.

Technical Skills

Python, C, C++, PyTorch, CUDA, Go, Java, Bash, Tensorflow, Numpy, Pandas, Polars, Scikit-Learn, OCaml, Haskell, Julia, Javascript, Linux, Git, gRPC, REST, Google Cloud, AWS, Docker, Excel

Experience

Genome Institute of Singapore – Research Intern — *Singapore* | July 2025 – September 2025

- Developed fast and accurate deep learning models for real-time nanopore signals segmentation. Learned how to use high-performance GPU clusters (A100, H100). Was able to greatly speed up training time by multiprocessing the data pipeline. **Outperformed the existing model using a fully convolutional architecture that was more accurate and fast for both training and inference.** Learned how to write CUDA/C++ kernels and perform low level Pytorch optimizations. Finally, presented my poster at the GIS25 conference.

Bordeaux Computer Science Laboratory – Research Intern — *Bordeaux, France* | May 2024 – July 2024

- Work consisted in exploring ways to train and use LLMs more effectively for software engineering tasks, by using efficient source code tokenizers. Learned how to build and train transformers from scratch, as well as how to fine-tune pre-trained models using PyTorch and HuggingFace. **Showed that models trained using my custom tokenizers could learn classification tasks on source code while using 5 times less tokens than GPT3.** Presented my progress in weekly meetings and gave a talk in front of the entire research team.

Projects

(See `mrochk.com/projects.html` for more.)

fastlob

- **Fast and minimalist limit order book (LOB) package in pure Python.** This package is meant to be safe, clean, and easy to reuse and extend for other developers. It is a roughly 1'500 lines project that I am still developing on my free time. My goal with this package is that it one day becomes the reference for anyone who needs a reliable LOB implementation in Python. The package is published and available on PyPI (more info and documentation: `fastlob.com`).

nn.c

- Feedforward neural network and other machine learning models implemented from scratch in pure C, without the use of any external library, from basic tensor operations to a trainable network.

Quant Finance Project

- Head of Quant Research for the Beta Sigma Club in Leuven, a club where we explore topics related to Mathematics and Finance [www.betasigmaclub.com]. This year I oversee and organize our group project in which we participate to a Machine Learning challenge organized by the hedge fund CFM, with the goal of ranking as high as possible.

Languages

- Spoken Languages: **English** [IELTS Academic: 7.5], **French** and **Russian**.

Extra Curricular Activities

- **Football:** Played soccer with various teams for more than 10 years, competed in many competitions and tournaments in France, Ireland, Belgium and Singapore. Currently playing for KU Leuven's football team.
- **Student Jobs:** Worked during every holidays since my first year of high school, mostly in restaurants and bars.
- **Volunteer Work:** In France, after school, I used to help primary school children with their homework and exercises.
- **Interests:** Artificial Intelligence, French & Russian Literature, Philosophy, Finance, Blockchain, Chess, Hiking.