Maxime Rochkoulets

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Education

KU Leuven • Leuven, Belgium   September 2024 ≈ June 2026
Master of Engineering • *Computer Science*
Currently enrolled in the first year of my master's curriculum, specializing in AI and machine learning.

University of Bordeaux • Bordeaux, France   September 2021 – May 2024
Bachelor of Science • *Computer Science*   Rank: 7/166
Bachelor obtained with honors, completed a two-semester exchange in Dublin during my final year.

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

Relevant Coursework

Data Structures & Algorithms, Compilers, Networks, Cryptography & Number Theory, Computer Architecture, Operating Systems, Probabilities & Statistics, Software Architecture, Distributed Systems, Linear Algebra, Parallel & Concurrent Programming, Machine Learning, Data Mining, Reinforcement Learning, Computer Vision

Internships

LaBRI (Bordeaux Computer Science Laboratory) – **Research Intern**   May 2024 – July 2024
- Research internship during which my work consisted in finding ways to train and use LLMs more effectively for Software Engineering tasks. I did so by using efficient source code tokenizations. I learned how to train Transformers from scratch, as well as how to fine-tune or modify pre-trained models (BERT) using PyTorch. I presented my progress in weekly meetings, and at the end, I gave a talk in front of the entire research team. **My approach showed that models could learn basic classification tasks on source code while using up to 5x less tokens than GPT3.**

Projects

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

fastlob – Python
- 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. My goal with this project is that it becomes the reference for anyone who needs a reliable LOB implementation in Python. The package is published and available for download on PyPI.

Trading System – Python, C++
- Currently working with a friend on building a trading system in top of the Binance cryptocurrency exchange. It is a long-term project that is teaching us how to deploy data collection pipelines on the cloud, analyzing and preprocessing high frequency limit-order-book data, as well as machine learning models training and evaluation.

Llama-Aurelius – Python, PyTorch, Transformers
- Fine-tuning the Llama-3.2-3B model on Marcus Aurelius' writings using QLoRA. It taught me a lot about techniques such as quantization, low-rank adaptation and fine-tuning. The model is available for use on my HuggingFace page.

nn.c – C
- Feed-forward neural network & other machine learning models implemented from scratch in pure C, without the use of any external library, starting from basic linear algebra operations to a fully functioning and trainable network.

Technical Skills

- Programming Languages Experience: Python, C, C++, Go, Java, Bash, OCaml, Haskell, Julia, JavaScript.
- Other Computer Experience: Torch, Tensorflow, Linux, Git, Numpy, Pandas, Scikit-Learn, gRPC, REST, Prolog, Google Cloud, Docker, LaTeX, HTML/CSS.

General Skills

- Spoken Languages: **English** [IELTS Academic: 7.5, 2024], **French** [Native] and **Russian**.

Extra Curricular Activities

- **Quantitative Finance:** Member of the *Beta Sigma Club*, a club where we explore topics related to Mathematics, Finance and Quantitative Research. We also organize and participate in various events and competitions.
- **Football:** Played soccer with various teams for more than 10 years, competed in many games and tournaments in both France and Ireland. I am now playing for KU Leuven's Falcons football team.
- **Student Jobs:** Worked during every holidays since my first year of high school, first in the fields and then in different restaurants and bars as a bartender and waiter.
- **Volunteer Work:** After high-school, in France, I used to help primary school kids with their homework and exercises.
- **Interests:** Artificial Intelligence, French & Russian Literature, Philosophy, Finance, Blockchain, Chess, Hiking.