







# Adrien Carrel

Quantitative Researcher, MSc, MEng, experienced in machine learning, research, programming and mathematics.

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## EXPERIENCE

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### Blockchain.com — Quantitative Researcher

August 2024 - now

London, United Kingdom

- Design and implement new crypto trading strategies.

### Schonfeld — Quantitative Researcher

October 2023 - August 2024

London, United Kingdom

Work for Farringdon Capital, a quant team of Schonfeld.

- Developed 15 mid-freq signals on US and EU equities with Sharpe ratios ranging from 1 to 3, using statistics and NLP.
- Co-responsible of a book  $\approx 150M\$$  AUM.
- Devised, implemented and monitored intraday arbitrage strategies across multiple assets.
- Created monitoring and risk management tools for the team.

### Massachusetts Institute of Technology (MIT) — Research Intern

March 2022 - September 2022

Cambridge, United States

- Analyzed the relationship between social vulnerabilities, political leaning and mortality (all-causes, COVID-19, excess mortality) across U.S. counties (Python, R, PyTorch).
- Mentoring of 8 students for HST.936: Leveraging Data Science in Global Health. Design of 4 assignments for HST.936 & HST.953: Clinical Data Learning, Visualization, and Deployments.

### Harvard T.H. Chan School of Public Health — Teaching Fellow

July 2022 & 2023

Boston, United States

Mentoring of 15 students for three different Machine Learning in Healthcare courses.

### Melanion Capital — Crypto Research Analyst Intern

August 2021 - November 2021

Paris, France

- Implemented the back-end algorithms behind the Melanion BTC Equities Universe UCITS ETF: AUM: 2.4 million €.
- Conducted quantitative research on how to replicate a volatile index (whitepaper written: *Maximum Benchmark Exposure*).
- Enhanced ML models to predict up and down surprises on futures on dividends (balanced accuracy increased by 5%).

### Lycée Hoche — Oral Examiner in Mathematics and Physics

March 2021 - June 2021

Versailles, France

Assessing 33 MP\* and MPSI (STEM) students' Mathematics & Physics skills and preparedness for taking the entrance examinations for the most selective French engineering "Grandes Écoles".

### CentraleSupélec — Teaching Assistant in Computer Science

November 2020

Paris, France

Assisted Professor during the "Coding Weeks": a 2-week intensive programming bootcamp. Mentored and graded 6 projects teams (31 students) about the use of TensorFlow and Open-cv Python libraries.

### LCsys — Machine Learning Engineering Intern

July 2020

Longjumeau, France

Improved Google's Tesseract OCR algorithm to detect printing defaults on French identity cards using deep learning and machine learning (accuracy evaluated on 12000 id cards increased from 96% to 99.6%).

## EDUCATION

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### Imperial College London — MSc Advanced Computing

October 2022 - October 2023

London, United Kingdom

- Grade: Distinction
- Thesis: Combinatorial Complex Score-based Diffusion Modelling through Stochastic Differential Equations.
- Relevant courses: Deep Learning, Probabilistic Inference, Computer Vision, Reinforcement Learning, NLP, Computational Finance, Mathematics for Machine Learning.

### CentraleSupélec — MEng (Diplôme d'ingénieur)

September 2019 - Expected October 2023

Paris, France

- GPA: 3.91/4. First Class Honours. Course representative.
- Relevant courses: Machine Learning, Advanced probabilities, Algebra and cryptology, Advanced statistics, Algorithmics & Complexity, Optimization, Partial Differential Equations.

### Lycée Hoche, Lycée Corneille, UVSQ — Classes Préparatoires - MPSI/MP\*

September 2016 - July 2019

Versailles & Rouen, France

- GPA: 4/4. Mathematics and Physics (Option: Computer Science). Student representative for 39 classmates.
- *BSc in Applied Mathematics* obtained at UVSQ in June 2019 while also attending Classes Préparatoires.

## SKILLS

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- Python, C++, Rust, R, SQL, OCaml, Javascript, MATLAB, Julia, Java, HTML, CSS, Git, LaTeX, React, Kdb+.
- Numpy, Pandas, Scipy, Scikit-Learn, Jax, TensorFlow, PyTorch, Numba, Research, Modelling, Data Analysis
- French (native), English (IELTS: 7.5), Japanese (B1, eq. N3), Spanish (A2/B1)

## ACTIVITIES

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- President of the Imperial College Dance Club - Ballroom Dancing and Latin (2023)
- President of the HipHop CentraleSupélec club (2020-2021)

## PROJECTS

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### **Vulpes** | *Personal project*

Created an AutoML Python package (alpha version). [github.com/AdrienC21/vulpes](https://github.com/AdrienC21/vulpes)

### **Algorithmic Trading & Machine Learning** | *Personal project*

*February 2021 - November 2021*

- Devised a cryptocurrency trading bot using customized strategies, strategies from academic papers, deep learning, parallel processing, and financial analysis.
- Deployed liquidation bots on Solana in TypeScript (earned  $\approx 1000\text{€}$ ).

### **NeurAI** | *Research project*

*September 2020 - November 2021*

Creation of a pipeline to automate the processing of EEG and MRI data. Development of Machine Learning models to predict patients' gender and age to eventually detect neurodegeneration and autism.

### **Optimal Transport for image processing** | *Research project*

*September 2018 - June 2019*

Applications of optimal transport in computer graphics and study of the impact of the given distance on the result.

### **Epitaxial Growth of Nanowires** | *Lab-based Research project*

*January 2017 - June 2018*

Optimized the growth speed of self-catalyzed GaAs nanowires during hydride vapor phase epitaxy.

## ARTICLE, PREPRINT, REVIEW, TALK, AWARD

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\*: co-first authors

### **Article**

Going beyond the means: Exploring the role of bias from digital determinants of health in technologies.

Marie-Laure Charpignon\*, [Adrien Carrel\\*](#), & al.

### **Preprint**

Neural Laplace for learning Stochastic Differential Equations.

[Adrien Carrel\\*](#). December 2022.

NeurML : From an automated EEG preprocessing pipeline with source reconstruction to ML models predicting gender and brain age.

Thomas Segré\*, [Adrien Carrel\\*](#), Ugo Muhieddine. June 2021.

### **Whitepaper & Technical Supporting File**

Maximum Benchmark Exposure

[Adrien Carrel](#), Jérémie Besson, Ghali Laraqui. September 2021.

Exposure to a benchmark and its replication with traditional assets

[Adrien Carrel](#), Jérémie Besson, Ghali Laraqui. October 2021.

### **Review**

KDD 2022 & 2024 Workshop epiDAMIK

### **Talk**

- 3rd Tokyo Health Datathon, Tokyo Medical and Dental University (September 2023) - Mentor.

- MIT Health Datathon (May 2023) - Mentor.

- Critical Care Data Analysis Summit and Tarragona Datathon (November 2022)

- Eitri Medical Datathon (September 2022) - 2 Workshops. EHR data and Machine Learning implementation pitfall.

- Make Health Colombia (August 2022) - Introductory Training, Classification and Regression using Python.

### **Award**

- Erasmus+ Grant (2022)

- Merit Scholarship - Ministry of Higher Education, Research and Innovation (2016 - 2019)

- Baccalauréat S (Scientific) with highest honors (June 2016)