Aurelien Pelissier, Ph.D.
02/17/1994

aurelien.pelissier.38@gmail.com
https://www.aurelienpelissier.com
Google Scholar Github
Linkedin Medium

Education

2019 – 2023 **Ph.D. Fellowship - AI & Computational biology**
ETH Zurich, Switzerland
Joint program with IBM Research.
(Expected graduation date: September 2023)
Germinal center B cell evolution, Antigen-Antibody binding, Gene regulatory networks, Single cell transcriptomic, non-Markovian processes, Interpretable AI, Drug discovery.

2017 – 2018 **M.Sc. Quantum physics, Nanophysics**
University Grenoble - Alpes, France
Double degree with ENS Paris-Salclay.
Quantum information theory, Nanoelectronics, Nanomagnetism, Nanophotonics.

2014 – 2018 **Grande École Degree - Fundamental physics & Applications**
Ecole Normale Superieure (ENS), Paris-Saclay, France
PHYTEM (PHYsics, Theory, Experiment, Modeling).
Statistical physics, Solid state physics, Astrophysics, Particle physics, Semiconductors.

2012 – 2014 **Scientific CPGE**
Classe Préparatoire aux Grandes Écoles, Grenoble, France
Two years preparation to highly selective national competitive exam.

Work Experience

Academic

2019 – 2023 **Ph.D. Fellowship - AI & Computational Biology**
IBM Research Zurich, Switzerland
SysBio Life Science department – Maria Rodriguez Martinez.
By combining mathematical modeling and artificial intelligence with the analysis of gene expression and RNA sequencing data, my work aims to unravel the complex mechanisms at the heart of our immune system, which contributes to the understanding of major diseases, such as lymphatic cancer, autoimmune diseases and HIV. My research covers B cell evolution in Germinal center [4, 5, 8], Antigen-Antibody binding [1, 3], Gene regulatory networks [2], Single cell transcriptomic analysis, and non-Markovian dynamics [6].

2018 – 2019 **Research Fellowship - AI & Raman Spectroscopy**
Imperial University of Hokkaido, Japan
Molecule & Life nonlinear science laboratory – Prof. Tamiki Komatsuzaki.
Development of Accelerated Measurement Technology for Cancer Diagnosis by bridging Single-Cell Raman Imaging and Information Science [7, 9].

Work Experience (continued)

Feb. – July 2018

Master Thesis - Reinforcement Learning
Imperial University of Hokkaido, Japan
Laboratory for Pattern recognition & Machine Learning - Prof. Atsuyoshi Nakamura.
Feature Selection as Reinforcement Learning by Monte Carlo tree search [13].
(Thesis) (Code) (Poster)

2016 – 2017

Visiting International Student - Experimental Physics & Modeling
University of British Columbia, Vancouver, Canada
Ultrafast Spectroscopy Laboratory – prof. David Jones.
Study of High Harmonic Generation (HHG) in high repetition rate systems.
(A one year research program as part of my ENS degree).
(Thesis) (Code) (Poster)

Apr. – July 2016

Research internship - Experimental Physics & Modeling
Ecole Polytechnique federale de Lausanne, Switzerland
Advanced Semiconductors for Photonics and Electronic (LASPE) - prof. Nicolas Grandjean.
Impact of piezoelectric effects on Nitride-III Nanobeam optical properties.
(Thesis) (Code)

Blockchain & Others

2020 – Onward

Quantitative Trader & Investor
Combining in-depth analysis of the emerging crypto currency market with various quantitative approach to develop investing and trading strategies relying on statistical arbitrage and the tracking of social media activity [10, 12].
(https://www.aaalgo-trading.com)

2022 – Onward

Co-Founder - Peer2Panel
The company aims at making investment in renewable energy secured, transparent and accessible to customers with capital of any size. With the acquisition of tokens backed by fractions of physical solar panels, clients can grow a renewable energy portfolio easily and affordably through the Ethereum blockchain [11].
(https://www.peer2panel.com)

Web3 Full Stack Developer - DeFi & NFTs
Coding smart contracts and user interfaces in the context of several projects participant of the Swiss blockchain Hackathon or Moralis Avalanche Hackathon. In addition to Peer2Panel, another established project is NFcop, which aims at bridging the gap between copyright and NFT.
(https://nfcop.com)

Medium Writer
Writing articles about diverse topics, including data science, blockchain, physics, economy and philosophy. The purpose of these articles is mainly to share my findings resulting from extensive research and reflections, so that it can benefit the ones who wonder about similar questions. These take the form of tutorials, pedagogic explanations, or opinion essays.
(https://aurelien-pelissier.medium.com/)

Skills & Interests

Languages	French (native), English (fluent - C2), Chinese (intermediate - B1) Japanese (basic - A2).
Coding (Academic)	Python, R, C++, Matlab, Fortran. Stochastic processes, Bayesian statistics, Interpretable ML, Deep & Reinforcement learning, Computer vision, LSTM.
Web3 Full Stack Dev.	JavaScript, React, HTML, Solidity, MySQL, IPFS.
Blockchain	EVM Smart contracts, NFT, DeFi, Chainlink VRF & price feeds. (ERC20 Liquidity pools, ERC721 & ERC1155 minting).
Hobbies	Outdoor sports, Breakdance, Painting. Strategy games (Chess, Go, Xiangqi), Rubik's cube.

Relevant Publications

Computational Biology

1. Anang, D.*, **Pelissier, A.***, Kraner, A., Cohelo, A., Rodriguez Martinez, M., & Niek, d. V. (2023). ACPA collagen in Rheumatoid Arthisis in mice. *Frontier in immunology*. Retrieved from submitted
2. **Pelissier**, **A.**, Laragione, T., Gulko, P., & Rodriguez Martinez, M. (2023). Cell-type specific gene regulatory analysis in Rheumatoid Arthritis identifies BACH1 as a key regulator in synovial fibroblast. *Frontier in immunology*. Retrieved from submitted
3. **Pelissier**, **A.**, Robert, P., & Rodriguez Martinez, M. (2023). Towards an accurate 3d structural antigen-antibody affinity model. *Frontier in immunology*. Retrieved from submitted
4. Luo, S.*, **Pelissier, A.***, & Rodriguez Martinez, M. (2022). Quantifying B cell clonal diversity in repertoire data. *Frontier in immunology*. Retrieved from submitted
5. **Pelissier**, **A.**, Stratigopoulou, M., Dimitriadis, E., Bende, R., van Noesel, C., Rodriguez Martinez, M., & EJ Guikema, J. (2022). Germinal centers convergent evolution and memory B-cell reentry in human lymph nodes. *Molecular Biology and Evolution*. Retrieved from submitted
6. **Pelissier, A.***, Slav, M.*, Beerenwinkel, N., & Rodriguez Martinez, M. (2022). Practical simulations of non-markovian stochastic processes and applications. *Proceedings of the National Academy of Sciences*. Retrieved from submitted
7. Taylor, J. N., **Pelissier**, **A.**, Mochizuki, K., Hashimoto, K., Harada, Y., Fujita, K., … Komatsuzaki, T. (2022). Standardization of Raman hyperspectral images across measurements and devices through extrinsic background correction. *Analytical Chemistry*. Retrieved from submitted
8. **Pelissier**, **A.**, Akrout, Y., Jahn, K., Kuipers, J., Klein, U., Beerenwinkel, N., & Rodriguez Martinez, M. (2020). Computational model reveals a stochastic mechanism behind germinal center clonal bursts. *Cells*, *9*(6), 1448. doi:10.3390/cells9061448
9. **Pelissier**, **A.**, Hashimoto, K., Mochizuki, K., Kumamoto, Y., Taylor, J., Fujita, K., … Komatsuzaki, T. (2019). Heterogeneous spatial distribution of carcinogenic area in single cells Raman images for the diagnosis of thyroid cancer. *arXiv preprint*. Retrieved from https://arxiv.org/abs/1904.05675

Others

1. Awad, A., & **Pelissier**, **A.** (2023). Sentiment analysis of the cryptocurrency market with statistical test. In *Cryptocurrency report*. Retrieved from submitted

2. Lehner, J., **Pelissier**, **A.**, Li, C., & Lehner, S. (2022). Peer2Panel: Democratizing renewable energy investment with liquid and verifiable tokenized solar panels. *Whitepaper*. Retrieved from https://drive.google.com/file/d/1KwQisfqb_MywtBVs1qfOsjNu-ARlGPq9/view

3. **Pelissier**, **A.**, & Belleza, H. (2022). Forecasting market trends by identifying extremes in investor psychology. In *Cryptocurrency report*. Retrieved from submitted

4. **Pelissier**, **A.**, Nakamura, A., & Tabata, K. (2019). Feature selection as monte-carlo search in growing single rooted directed acyclic graph by best leaf identification. In *Proceedings of the 2019 siam international conference on data mining* (pp. 450–458). SIAM. doi:10.1137/1.9781611975673.51

Trainings & Certifications

Ongoing — **Plane private pilot license (PPL)**
Aéroclub du Grésivaudan, Grenoble, France

2020 — **Innosuisse Entrepreneurship Program**
Zurich, Switzerland
From Idea to Market, Business model development, Financial planning & Pitching.

2017 — **Scuba Diving - PADI Advanced Open water**
Vancouver, Canada
Dry suit, Night dive, Cave dive, Deep dive (40m).

AST1 – Avalanche Skills Training
Vancouver, Canada
Evaluating avalanche terrain, Avalanche rescue.

2015 — **CAF (Alpine French Club) Mountaineering Training**.
Grenoble, France
Multipitch climbing, Roping up on glacier, Crevasse rescue.

References

Available on Request