

Lolézio VIORA MARQUET

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First-Class Honours MEng Electronic & Information Engineering graduate from Imperial College London, focused on **quantitative and high-performance software**. Hands-on with **C++ systems work**, **performance optimisation** and **GPU/parallel computing**, and a track record of taking machine-learning research from Python prototype to production, including a live, profitable cryptocurrency trading system with full backtesting and deployment infrastructure.

Experience

- **Software Development Engineer Intern at Amazon** April 2025 - September 2025
Joined the Amazon Fuse team and built an internal full-stack web application from user requirements, with a modern, dynamic React frontend. Implemented a strong authentication system with gated APIs allowing authorised users to query, edit and delete production database entries, on a native AWS stack (API Gateway, Lambda, DynamoDB). Engineered for scale and low latency: 150 daily users and 3,000+ daily requests, peaking at over 12,000, served at sub-300 ms latency with minimal operational cost.
- **Software Engineering & Data Science Intern at Equinor** June 2024 - August 2024
Joined the Renewables Bid Excellence team. Developed a cloud-hosted RAG application that uses natural language processing to retrieve the most relevant documents for a user question, with an LLM generating a grounded answer and citing its sources. Built the retrieval and data pipelines that turn hours of manual search across thousands of documents into a few-second query.
- **Software & Machine Learning Engineer at Maisha Design** November 2023 - January 2026
Applied modern machine learning (generative AI and conditional GANs) to improve the creative workflow of an interior-design firm. Built a full-stack application centralising supplier furniture offerings in a database, with a project-management frontend that generates invoices and supports catalogue exploration. Delivered automated web scrapers and LLM-enhanced category matching, cutting project turnaround time by 30%.

Education

- Imperial College London** – MEng Electronic and Information Engineering October 2022 - June 2026
1st Class Honours. Core engineering skills in mathematics, AI/ML, hardware, software, networks and databases.
- Vienna International School** – International Baccalaureate Diploma August 2015 - May 2022
IB DP 43/45 with Mathematics Analysis & Approaches (7/7), Physics (7/7) and Chemistry (7/7) at Higher Level, Economics (7/7), Spanish (7/7) and English Language & Literature (6/7) at Standard Level. EE in Physics. 1560 SAT in 2021.

Projects

- **Cryptocurrency Trading Bot** (July 2024 - Present): independently building a systematic trading bot: a transformer-based architecture that predicts crypto market movements and executes live trades through the Binance API from an AWS EC2 instance. Averaged 30% returns.
Took the model from Python research to 24/7 production. Built a full end-to-end backtesting, simulation and deployment pipeline that replays real market conditions (fills, fees, slippage) to validate strategies before they trade live capital. Engineered features from high-frequency tick data using quantitative and signal-processing methods to denoise price signals, trained the model on Google Cloud, and prioritised reliability and positive risk-adjusted returns throughout.
- **AutoFuser: Automatic GPU Kernel Fusion** [GitHub] (January 2026 - March 2026): a compiler-style framework that automatically detects fusion opportunities in deep-learning models and generates, fuses and auto-tunes GPU (Triton) kernels to cut memory traffic and latency, similar in spirit to `torch.compile`.
Extracts the data-dependency graph, identifies fusable chains, selects a per-candidate tiling strategy, emits the fused Triton kernel and auto-tunes its configuration before rewriting the graph. Built as modular, independently unit-tested and benchmarked stages, delivering measurable throughput and memory-bandwidth gains on scientific machine-learning models. Direct, hands-on work on profiling, advanced data structures and parallelism.

C++ & Systems

- **Full-octave STM32 Synthesiser** [GitHub] (February 2025 - March 2025): a real-time RTOS synthesiser (electronic piano) in embedded C++ on a multi-threaded architecture, with a custom 3D rendering engine running the game DOOM, under hard STM32 limits (64 kB RAM, 256 kB flash).
*Wrote performance-critical C++ with **no dynamic memory allocation** and careful ownership of fixed buffers to meet real-time deadlines. Hand-optimised the render loop to a worst-case full-screen refresh of 48 ms (≈ 18 ms average, 45 fps) via chunked rendering, perspective warping and a lean threading model, and implemented the full game: 2.5D world exploration, enemies, shooting mechanics and joystick control.*
- **C90-to-RISC-V Compiler** [GitHub] (January 2024 - March 2024): a C compiler written in C++ that translates pre-processed C90 source into RISC-V assembly.

Designed the internal instruction representation, integrated lexer/parser and the code-generation passes, with an emphasis on clean abstraction and STL-based data structures, validated against an extensive automated test suite. Sharpened practical command of the C++ memory model and systems-level tooling.

- **Pipelined RISC-V CPU** [\[GitHub\]](#) (October 2023 - December 2023): a fully functional RISC-V CPU in SystemVerilog: single-cycle, then pipelined with static branch prediction, hazard handling and a data cache.

Built and verified the datapath end-to-end against assembly test programs. The pipelining, hazard-handling and caching work gave a concrete, low-level model of the latency and memory-hierarchy trade-offs that govern high-performance systems.

- **Fyrryx Rover** [\[GitHub\]](#) (June 2023): a wirelessly-controlled rover built for Imperial's Electronics Design Project, with embedded C++ firmware split across two microcontrollers and a Python (pygame) controller client.

Wrote the embedded C++ running on an AdaFruit Metro M0 main board and a secondary microcontroller, exchanging state over a JSON protocol (ArduinoJson), with a wireless link to a pygame ground-station GUI for real-time driving.

Machine Learning & Python

- **Master's Thesis: Neuro-Symbolic Learning under Multi-Modal Data** (October 2025 - June 2026): MEng thesis on making neuro-symbolic AI "right for the right reasons": getting models to reason over the correct underlying concepts rather than exploiting shortcuts, even when a concept can take many different visual forms.

Reached a new state of the art across multiple established neuro-symbolic frameworks, substantially improving concept-level accuracy both in- and out-of-distribution while using only a fraction of the usual supervision, and validated the approach on real-world autonomous-driving data. Implemented in PyTorch with reproducible experimental pipeline on A100 GPUs (publication in preparation).

- **IoT Embedded Personal Trainer** [\[GitHub\]](#) (January 2025 - February 2025): team of 3 building a real-time personal trainer: a Raspberry Pi feeding an AWS EC2 Flask server and a React Native mobile app, tracking and analysing workouts live.

Implemented asynchronous handling for a scalable number of concurrent users, with machine-learning analytics, an intuitive UI, graphical result display and dynamic control of the workout.

Skills

Programming - C/C++ (STL, memory management, multithreading, RTOS), Python, TypeScript & React, Java & JavaFX, Swift

Data & ML - PyTorch, NumPy, pandas, Jupyter, Triton/CUDA, signal processing, quantitative & feature engineering

Systems & Infra - native AWS (Lambda, API Gateway, DynamoDB, EC2), Google Cloud, SQL, Shell scripting, Git, SystemVerilog/Verilog, RISC-V, MATLAB

Spoken languages - French & English (bilingual) | German & Spanish (professional working proficiency)

Awards

- **The Undergraduate of the Year Awards 2024:** Finalist in category Artificial Intelligence and Robotics
- **Vienna International Science Fair 2021:** Best in Computer Science & Best in Division 14 and above.
- **World Economics Cup 2021:** Silver Medalist, Team 7th Worldwide, Team Presentation 4th Worldwide.