

Joshua Hirschhorn

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EDUCATION

Imperial College London

London, UK

MEng Computer Engineering (EIE)

Sept 2024 - Jun 2028

- Current Grade: First Class Honours **Dean's List (top 10% of cohort)**.
- Relevant Modules: Signals and Systems (80%), Mathematics for Engineers (80%), Data Structures and Algorithms (78%), Instruction Set Architectures and Compilers (77%), Operating Systems and Concurrency (75%)

University College School

London, UK

A Levels

Sept 2021 - Jul 2023

- Further Mathematics (A*), Mathematics (A*), Physics (A), Computer Science (A).

AWARDS & RECOGNITION

Y Combinator Startup School

San Francisco, CA

Selected as 1 of 20 high potential British founders from 30,000 applicants and 6,000 attendees.

Jul 2026

University College School

London, UK

Prize for the best Further Mathematics result in the school's history (96% , 97%, 99% across 3 papers).

Aug 2023

PROFESSIONAL EXPERIENCE

Cantor Fitzgerald & BGC Group, *Quantitative Developer Intern* | London

Jul 2026 - Present

- Designed and deployed a scalable Apache Airflow DAG orchestrating a monitoring pipeline for Nomad jobs, automatically analyzing Solace queue health and generating outage reports, cutting mean time to detection by 95%.

BlackRock, *Aladdin Engineering Spring Intern* | London

Apr 2026

- Selected as **1 of 12 participants** from over **11,500 applicants** and **ranked 1st in python technical coding challenge**.
- Built adopted Windsurf plugin learning coding patterns, lifting suggestion accuracy ~25% and cutting review time ~30%.

Morgan Stanley, *Technology Spring Intern* | London

Apr 2026

- **Ranked 1st/15** in an algorithmic trading challenge, developing low latency Python strategies under market constraints.
- Applied combinatorics and expected value analysis in team probability simulation, modelling decisions under uncertainty.

Magic AI, *Computer Vision and ML Systems Intern* | London

Aug 2025 - Oct 2025

- Proposed and built **automated evaluation pipeline** to benchmark internal pose estimation models, enabling systematic comparison and optimisation using YOLO pose and TCPFormer to assess temporal correlation and depth accuracy.
- Improved model performance by **15% on 60% of systems** by introducing consistent evaluation metrics and feedback loops.
- Designed **multithreaded 12 camera system** (30fps, low latency) for real-time pose estimation and data labelling.

Amazon AWS, *Technology Spring Intern* | London

Apr 2025

- **Ranked 2nd / 20 in application development challenge** building predictive models for decision optimisation.
- Deployed Flask app on EC2, configuring security groups, REST APIs and CloudWatch monitoring for a live AWS service.

Yorlet, *Software Engineer Intern* | London

Feb 2024 - Mar 2024

- Developed a **tenant onboarding system** in TypeScript that improved conversion by **26% via A/B testing**.
- Built a distributed notification system (Node.js, MongoDB, Flask) for **11K+ users** and improved rent payments by **24.4%**.

RELEVANT PROJECTS

Pipelined Fixed-Point FPGA Compute Engine (SystemVerilog, Unity, C#, Python) | [GitHub](#)

May 2026 - June 2026

- Top contributor to public multi-contributor repo: implemented **12-lane Q4.14** pipeline 98.2% DSPs at overclocked 110MHz.
- Contributed acceleration path achieving 0.31Mpx/s at 2K; cut runtime from **61,878s to 7.10s** (8,715x, ~3,100x less energy).
- Replaced FastAPI transfer with custom binary TCP, cut frame transfer latency by 96% from **1µs/Byte to 42 ns/Byte**.
- Built Unity/C# visualisation client for public team repo, decoding streamed FPGA frames with live parameter control.

Real-Time FPGA-Accelerated Crypto High Frequency Trading System | [GitHub](#)

Feb 2026 - April 2026

- Led public multi-contributor team repo building a low-latency trading system with FPGAs and live Binance order book data.
- Contributed online-learning module using incremental outer-product updates, enabling live in-production model updates.
- Engineered real-time feature pipeline in team codebase using 17 order book microstructure signals for 2-second horizon.
- Benchmarked FPGA acceleration path at **~18x average (68x peak) speedup** vs NumPy with 57.6% live directional accuracy.

High-Performance C90 Compiler with Optimisation Pipeline (C++ / RISC V)

Dec 2025 - Mar 2026

- Built full C90 compiler in C++ (30k+ LOC), implementing parsing, AST, semantic analysis, and RISC-V code generation.
- Implemented **compiler optimisations** (constant folding, dead code elimination, branch resolution) with full type checking.
- Validated via Dockerised CMake/Python testbench with 300+ C programs and on push CI GitHub Action (100% pass rate).
- Used polymorphic ASTs, RAII smart pointers, std::variant typing, template dispatch and dynamic_cast based codegen.

SKILLS

Languages: Python, C++, C, C#, Swift, SQL, SystemVerilog, Lua

Frameworks & Tools: TensorFlow, PyTorch, Pandas, NumPy, Flask, FastAPI, Unity, REST APIs, MongoDB, Git, OpenCV, MediaPipe, Linux, UNIX, Multithreading, Neovim, Tmux, Docker, Kubernetes, CMake, Nomad, Apache Airflow