Ilan Iwumbwe

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Profile

I am keen to learn new skills and become a competent problem solver and engineer. I do this by challenging myself with projects which introduce me to unfamiliar concepts, and exercise my pre-existing skills.

Education

Imperial College London *Oct 2022 – June 2026*
MEng Electronic and Information Engineering

- **First year modules:** Mathematics, Analysis and Design of Circuits, Digital Electronics and Computer Architecture, Programming for Engineers (C++), Electronics Design Project
  Grade: 65%

- **Second year modules:** Mathematics and Statistics, Instruction Architectures and Compilers, Software Systems, Discrete Maths, Control Systems, Signals and Systems, Electronics Design Project
  Grade: 64%

- **Third year modules:** Advanced Computer Architecture, High Level Programming, Deep Learning, Machine Learning, Mathematics for Signals and Systems, Network and Web Security, System Performance Engineering, Advanced Creative Writing
  Grade: 64%

The National Mathematics and Science College *Sept 2020 – June 2022*
A levels

Subjects taken: Further Maths, Maths, Computer Science, Physics
Grade: 4 A*

Experience

CPU Performance Verification Intern *Cambridge*
Arm *April 2025 – Sept 2025*

- Wrote microbenchmarks in C to calculate latency and bandwidth from memory to the CPU while taking into account varying characteristics of the memory controller
- Wrote performance counters in Verilog to monitor AXI transactions at the memory controller, collect statistics, and use them to calculate actual latency and bandwidth at the memory controller

Undergraduate Researcher *London*
Imperial College London *July 2024 – Sept 2024*

- Worked with a colleague to write a tool that finds bugs in quantum compilers
- Found 17 bugs in Pytket, Cirq and Qiskit
- Fully funded by Imperial College London

Software Engineer Intern *Remote*
Imperial College London *June 2023 – Sept 2023*

- Implemented a feature in Issie to allow users to import circuits into their projects
- Redesigned circuit simulation UI to look a bit cleaner

Publications

QuteFuzz

repo

Published on 30/10/2024 at PlanQC, this paper presents our novel work in generating quantum circuits with control flow and subroutines, and the bugs we found in quantum compilers as a result

Projects

Technologies used: C, C++, Python, Bash

RISCV-assembler *repo*

A minimal assembler for RV32I

Ylva *repo*

A UCI compliant chess engine.

I had a lot of fun writing the code for Ylva. I learnt a lot of new techniques and strategies for optimising code, that are not only applicable when writing a chess engine.

RISCV-CPU *repo*

Worked in a team of 4 to implement a CPU capable of running the full RV32I instruction set

I practiced my team-working, communication and listening skills. I also gained a deeper understanding of pipelining and hazard control

QuteFuzz *organisation*

Built a fuzz testing tool to find bugs in quantum compilers, which generated programs for Qiskit, Cirq and Pytket, finding 17 bugs in those compilers. Currently working on another fuzzer which uses a unified grammar representation to describe circuit-based quantum programs, hence decoupling the fuzzer from any particular language details.
This project is supported by the Unitary Foundation.

Hobbies and extra-curriculars

Piano, Football, Reading, Bouldering, Movies