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ILAN IWUMBWE

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.

PROJECTS

8-BIT CENTRAL PROCESSING UNIT (CPU)

Built a CPU with a memory unit, registers, Arithmetic Logic Unit (ALU), 7-segment display, control unit, clock, and program counter using breadboards and integrated circuits.

I improved my debugging and circuitry skills, as well as my knowledge of the inner workings in computers.

16-BIT COMPUTING SYSTEM

Built a CPU, Memory, and ROM in Hardware Description Language, as well as a compiler, Virtual Machine translator, assembler, and a library to extend the high-level language, Jack, used to write programs for the computer.

I improved my understanding of the technology stack that makes computers work at various levels of abstraction.

TETRIS AI

Wrote a program that trained a population of neural networks on Tetris and chose the best performers to tune the weights of a population of child neural networks.

I improved my understanding of the inner workings of neural networks, as well as complex algorithms.

CHESS GAME

Wrote a program that uses bitboard representation to generate chess moves in each position and used a simple material-based evaluation to pick the best move.

I improved my understanding of complex data structures and algorithms. I also learnt about the value of writing efficient code.

MARS ROVER

Worked in a team of six to build a robot that could detect radio and IR signals and decode them into the name and age of an alien, respectively. I worked on writing code to host a webpage on an ESP32 board, send

and receive commands via WebSocket protocol to control the robot, and update information on the webpage.

I learnt about the technology stack that runs the internet, and how protocols can be used to perform networking tasks.

ISSIE

I contributed to Issie; an F#/elmish/electron application used to build computer architecture circuitry. I worked on a feature that allows users to import design sheets between directories through a clean and robust interface, which manages edge cases like dependencies of sheets.

I learnt about functional programming and had the opportunity of contributing to an open-source project.

SKILLS

I have worked with the following programming languages: Python, C++, F#. Through contributing to open source, I have worked with Git.

I also enjoy solving problems that require critical and analytical thinking and communicating my ideas to others.

EDUCATION

MENG ELECTRONIC AND INFORMATION ENGINEERING, IMPERIAL COLLEGE LONDON, LONDON, 2022-2026

First year modules: Mathematics, Analysis and Design of Circuits, Digital Electronics and Computer Architecture, Programming for Engineers (C++), Electronics design project

A-LEVEL, THE NATIONAL MATHEMATICS AND SCIENCE COLLGE, COVENTRY, 2020-2022

Studied Mathematics, Further Mathematics, Physics, and Computer Science.

Grade: 4A*

Representative on open days, and co-head of robotics society

REFERENCES

DR THOMAS CLARKE

Principal Teaching Fellow, Department of Electrical and Electronic Engineering, Imperial College London

t.clarke@imperial.ac.uk

DR DANIEL NUCINKIS

Mathematics Lecturer, Department of Electrical and Electronic Engineering, Imperial College London

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HOBBIES

Piano

Football

Reading

Hiking

Bouldering