

## Education

### Imperial College London

September 2019 - Present

BEng in Computing.

#### ARM Emulator and Assembler

May 2020

- Wrote an emulator and assembler in C for a subset of the ARM instruction set architecture.

#### Wave Function Collapse MIDI

May 2020

- Implemented the Wave Function Collapse algorithm in C.
- Applied it to MIDI to generate music.

### Kingsbridge Community College

June 2019

A\* in Maths, Further Maths, Chemistry, and Physics.

## Work Experience

### Software Engineer Intern at Emotech

July 2018

- Added extra functionality to Olly robot to allow users to request jokes via voice recognition.
- Implemented a Golang micro-service to serve trivia questions and answers.
- Extended propriety visual language (Inga) to allow Olly to communicate with trivia micro-service.
- Implemented behavior using Inga to allow the user to play a game of trivia with Olly.

## Skills / Knowledge

### Programming

- **Proficient:** Haskell, Java, C, Python, JavaScript, Bash, HTML, CSS.
- **Learning:** Rust, Go, C#, C++, Lisp, SQL, ASM, ReactJS, Flask, Django, Gin.

### Tools, Programs, and Services

- **Proficient:** Git, Unity, Blender.
- **Learning:** Cloudflare, Google Cloud, AWS, Godot, GDB, Valgrind.

### Ethical Hacking / Pentesting

- Kali linux, Nmap, Nikto, Hashcat, John the Ripper, Wireshark, THC Hydra.

## Personal Projects

Over 60 personal projects hosted at [github.com/wdhg](https://github.com/wdhg)

### Genetic Snakes

August 2020

Implementing the NEAT genetic algorithm to train an AI agent to play a perfect game of Snake.

### imperial.social

August 2020

Launched and maintained a social network for Imperial students using Mastodon.

### Bitwise Art

May 2020

Creating art using bitwise operations.

### Gravitational Bodies

April 2020

Implemented the three-body problem to render the figure-8 solution.

### logiTeX

February 2020

A transpiler that converts a custom logic based language into LaTeX.

### Go Slow

June 2018

Implementation of the layer 7 'slowloris' DOS attack.

## Awards and Achievements

### IC Hack 20

February 2020

- Competed and won two categories at the largest 24 hour student run hackathon in the UK.
- Built a rendering pipeline to display 2D and 3D graphics on an analog oscilloscope.

## Personal

- Participated in several hackathons and game jams including Google's Hashcode, Ludum Dare and GMTK Game Jam.
- Participated in Project Euler and Advent of Code programming challenges.
- Built a 3D printer.
- Interested in Virtual Reality.
- Boulderling
- Learning to play guitar.