# William Grant

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wdhg.me

## 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 behaviour 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**

### Creep
**October 2020**

A concurrent web crawler written in Go

### 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.
- Bouldering
- Learning to play guitar.