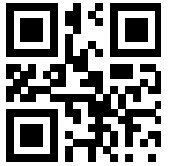


# William Grant

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🌐 [wdhg.me](http://wdhg.me)  
🔄 [/wdhg](https://github.com/wdhg)  
📺 [/wdhg](https://www.youtube.com/wdhg)



## Education

**Imperial College London** September 2019 - Present

MEng in Computing (Visual Computing and Robotics)

**Pintos** October 2020

- Built an Operating System from a bare bones framework in C.
- Implemented kernel threads, scheduler, loading and running user programs, and virtual memory.

**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 microservice 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:** Go, Scala, Rust, C#, C++, Lisp, SQL, ASM, ReactJS, Flask, Django, Gin.

### Tools, Software, and Services

- **Proficient:** Git, Unity, Blender.
- **Learning:** Docker, Cloudflare, Google Cloud, AWS,

Godot, GDB, Valgrind.

### DevOps and Software Engineering

- TDD, CI, Microservices, Containers.

### 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)

**Reggie** November 2020

Encoding and running register machines.

**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.

**Bitwise Art** May 2020

Creating art using bitwise operations.

**Gravitational Bodies** April 2020

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

**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.