

ALEX CUMMINS

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EDUCATION

- Imperial College London - Penultimate Year Computing MEng** London, UK — 2018 - 2022
- First year **2:1** - modules included Graphs, Algorithms, Logic, Databases, Reasoning about Programs.
 - Second year **1st (79.65%)** - modules included Software Engineering Design, Operating Systems, Algorithms II.
 - **96%** Group Project in **C** - Led a team of 4 to develop an ARM11 Assembler and Emulator in C.

SKILLS

Proficient: Java, Kotlin, Python, Git — **Familiar:** C, Haskell, React Native, HTML, CSS, SQL, Unix/Linux, LaTeX

PROFESSIONAL EXPERIENCE

- IMC Trading BV - Software Engineer Intern** June - August 2020
- Implemented market volatility calculations distributed over a compute cluster, aggregating live market data and publishing calculated volatility data for use by traders.
 - Developed with **Java** and **Maven**, using **Hazelcast** distributed maps to share state between processes in the cluster.
 - Continuously integrated with production using **TeamCity CI/CD**.
 - Applied Options and Market Making theory to **Python** trading simulations.
 - Tested code with **JUnit** and **Mockito**, and IntelliJ debugging tools.
 - Presented the project to over 50 IMC employees over Zoom.

PROJECTS

- SwiftStaff** [React Native, JavaScript, Kotlin, MongoDB, Gradle, TravisCI, Git]
- Led a team of 4 to develop an app for iOS and Android to help restaurants and cafés find temporary workers.
 - Utilised React Native front-end with Kotlin based REST and WebSocket API back-end, for real time job updates.
 - Followed an agile and user feedback-driven design and development process.
 - Created a Travis CI/CD pipeline to redeploy the backend server and build and upload the android APK to Dropbox.
 - Came in the **top 10** out of 50 projects in the year.
- TeachWell - ICHACK20** [Python, React, Cisco Meraki API, Git]
Imperial College Computing Society Hackathon (24 Hours)
- Won **second place** in ICHACK20 leading a group of 5 to build a real-time classroom feedback monitoring program.
 - Utilised Azure Rekognition API and Cisco Meraki smart cameras, with a real-time React web dashboard.
- Pintos** [C, Git]
- Developed an operating system in x86 architecture in a group of 4 students.
 - Solidified my understanding of the roles of the kernel, virtual memory, memory organisation, concurrency, thread-safety, scheduling, user programs, syscalls, and many other concepts widely used in operating systems today.
- WACC** [Kotlin, ANTLR, Bash, Gradle, GitlabCI, Git]
- Implemented a compiler for a C like language called WACC in a team of 4.
 - Performed lexical analysis, syntactic analysis, semantic analysis and ARM11 Assembly code generation.
 - Extended with function overloading, constant propagation, and a shell to run WACC code.
- LED Matrix Music Visualiser** [Python, C, Kotlin, Git]
- Created a 10x10 matrix of 100 WS2811 addressable LEDs controlled by a Raspberry Pi.
 - Uses fast fourier transforms to split frequency of music into dynamic frequency bands.
 - Currently rewriting in Kotlin to use a real-time audio input stream and additional web display to test visualiser.
 - Programmed mesmerising animations on the LEDs and games of Snake and Mastermind.
- Maze Generation Animation and Analysis - A Level Extended Project** [Python (NetworkX)]
- Implemented 7 maze generation algorithms, rendering the mazes as they are generated and analysing characteristics.
 - Presented to teachers, peers and families in an engaging market-hall style presentation event.

EXTRACURRICULARS:

- The Goose Pub, Fulham** 2019
- Empathised and worked directly with customers in a high pressure, fast-paced environment.
 - Built strong inter-personal relationships with both fellow bar staff and customers alike.
- Air Training Corps** 2015 - 2018
- Actively led and engaged in many teamwork and leadership exercises and competitions.
 - Received a Commanding Officer's Commendation for discipline and hard work.