

James Rennie

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Education

University Of Bristol *(graduating 2027)*

Masters of Engineering with Study Abroad in Computer Science

- **Key modules:** Parallel and Distributed Systems, Imperative and Functional Programming, Algorithms, Computer Architecture

Project Experience

Scheduling Desktop App | Sprint Community Transport

(Flutter)

- Working with the charity to develop a bespoke scheduling and client management software, to modernise their current labour intensive solution.
- Developing the desktop app using Flutter and an SQL database, allowing multiple people to manage the stored client data and update schedules.
- Implemented Continuous integration using GitHub, increasing development speed and ensuring consistent and reliable code releases.
- Leading the communication with the client, arranging meetings and collecting feedback, managing both the team and the clients time effectively and meeting their deadlines.
- Managing collaborative development using GitHub and Git, along with an agile methodology.

Parallel and Distributed Benchmarking

(GO)

- Writing a serial, parallel and distributed version of Conway's Game of Life, using Go to include multithreading in the solution and AWS to distribute workloads.
- AWS implementation: Distributed the processing across multiple AWS instances to increase performance, using both single threaded and multithreaded approaches. Utilised Goroutines and channels to produce an effective solution which increased performance, along with Remote Procedure calls for communication over the network.
- Parallel version: Using Go's channels and Goroutines to increase efficiency on a single device, speeding up computation.
- Benchmarked and compared performance of all versions, including using CPU profiling to find and improve inefficiencies.

Automatic Maze generation game

(Python)

- Used a recursive backtracking algorithm, along with a search algorithm, to produce visually appealing and solvable mazes, for gameplay in a maze solving game.
- Effective implementation of many foundational algorithmic principals.
- Use of object oriented principles to implement a more reliable and maintainable solution.
- Implemented a user interface, settings and gameplay for use of the mazes, making a more visually appealing UI.

Achievements

Team GB canoe slalom athlete: Showed high levels of drive, commitment and self motivation to achieve a place on the reserve team for international events in the sport canoe slalom with team GB.

Combat Robotics competition 1st place: Developed and built multiple combat robots from scratch for Bristol based events in combat robotics, solving problems and learning new skills to achieve first place at the most recent BEES robot wars event.

Technical skills

Languages: Dart, Python, Go, Java, HTML, Haskell, C

Technologies: Git, GitHub, AWS, Android SDK, Flutter

Concepts: Agile methodology, Parallel programming, Continuous integration, Test Driven Development, Algorithms, Object oriented paradigms.