Oliver Paynter-Jones

📞 07984297332 　✉ opaynterjones@gmail.com 　in LinkedIn 　Blog

Education

University of Bath **Oct. 2022 – Jul. 2026**

MComp (Hons) Computer Science and Mathematics, predicted First

- Principles of Programming (84%), Artificial Intelligence (75%), Mathematics: Analysis and Algebra (65%), Foundations of Computation (82%), Functional Programming (81%)

Christ the King College, Isle of Wight **Sept. 2015 — Jul. 2022**

A-Levels

- Further Mathematics (A*), Mathematics (A*), Computer Science (A*), Economics (B)
- EPQ: Optimising education from a student's perspective (A*)

GCSEs

- 8 grade 9s, 2 grade 8s

Experience

Marina Staff **Jun. 2023 – Oct. 2023**

East Cowes Marina *East Cowes, Isle of Wight*

- Demonstrated effective leadership and communication skills by directing boat berthing in challenging weather conditions, ensuring the safety of customers, and protecting marina property
- Managed customer interactions and transactions, demonstrating strong interpersonal skills and the ability to quickly learn and adapt to new software systems
- Regularly conducted safety assessments, addressing potential issues with a keen eye for detail and a proactive approach to maintaining a safe environment

Projects

The Perfect Keyboard: A Genetic Algorithm Experiment | *Python* | 🖉 Blog

- Developed a genetic algorithm to generate and optimize keyboard layouts for enhanced typing speed and experience
- Utilized frequency data of 246,000 words from Google's book corpus for population evaluation
- Implemented custom crossover and mutation algorithms to evolve the population
- Discovered an optimal keyboard layout that maximises the desirable traits of the perfect keyboard layout

Society Matchmaker | *React, Flask, SQL, Git* | 🖉 Blog

- Worked in a team of 8 to identify a problem with student-society engagement and conduct interviews with stakeholders
- Took a leadership role in the team, overseeing the system development process and providing tutorials on design, version control, testing, and CI/CD pipelines
- Contributed significantly to frontend development, resulting in a dynamic system with features such as user account management, interest polling, and personalized event recommendations based on user information
- Conducted a statistical analysis of the system and found an average improvement of 150% across two metrics compared to existing systems, indicating increased student engagement

Solving the Rubik's Cube with Group Theory | *Python* | 🖉 Blog

- Developed a Python-based solver using advanced mathematical algorithms and NumPy/pandas libraries
- Conducted in-depth research on mathematical techniques and applications to optimise efficiency and speed
- Achieved sub-second search times using a custom cube encoding/decoding algorithms and a modified IDA* algorithm with search-space pruning for an optimal solution to any Rubik's Cube scramble
- Created comprehensive documentation to explain the solver's theory and implementation

Suduko Puzzle Solver | *Python, Jupyter Notebook* | 🖉 Blog

- Leveraged bitwise data structures and operations to efficiently represent and manipulate puzzle candidate sets, significantly reducing computational overhead
- Used machine-learning techniques to create an backtracking search that uses advanced constraint propagation techniques such as X-wings, swordfish, and unique rectangles, to guide the search with minimal clues
- Benchmarked the solver on a compilation of the most difficult 1500 puzzles and achieved top-tier performance, consistently solving them in under 0.05 seconds

Skills

Languages: Proficient: Python. Intermediate: Java, C, JavaScript, SQL
Developer Tools: Git, VS Code, IntelliJ, Eclipse, Juypter Notebooks
Libraries: Pandas, NumPy, Matplotlib
Technologies/Frameworks: React, Flask, GitHub, JUnit, GitHub Actions