

Education

- 2020-2024 **The University of Manchester**, *MEng(Hons) Computer Science, Expected First class.*
- Completed BSc with a GPA of 86%, gaining first-class grades in all enrolled computer science modules.
 - Achieved top 5% of 400 second-year students with an 89% year average.
 - Awarded marks of over 90% in Intro to AI, Visual Computing, Algorithms and Data Structures, Software Engineering, System Architecture, Mathematical Techniques for Computer Science and Data Science.
 - Won Netcraft Prize for top 10 first-year students with a 90% year average.
 - Awarded the Kilburn Entry Scholarship for A-Level performance.
- 2017-2019 **Royal Grammar School, Newcastle upon Tyne.**
- A-Level Results** - A*A*AA in Physics, Mathematics, Further Mathematics and Psychology.

Experience

- 2023–Present **NimbleAi Project (University of Manchester)**, *Casual Research Assistant*, nimbleai.eu.
- Neural accelerators in SystemVerilog:** Implemented software-driven neuromorphic hardware for computer vision endpoints, contributing to early perception and optimisation. Improved the sensor's processing efficiency by identifying and prioritising regions of interest, minimising unnecessary processing. Contributes to achieving the broader project aims of a 100x performance increase and 50x latency reduction compared to existing systems. Illustrated the benefits of iterative development to navigate changing requirements from within UoM and external contributors.
- 2019–2020 **Enigma Interactive**, *Junior Developer*, enigma-interactive.co.uk.
- OOP using Java:** Collaborated alongside three senior developers on the 'core team' to build the foundational functionality on which most sites extend. Demonstrated the importance of clear APIs, working on large codebases and thorough testing.
- JavaScript & PHP:** Developed transplant-resource.newcastle-hospitals.nhs.uk for NHS Heart and Lung transplant patients using custom WordPress themes and plugins. Enforced the need for accessibility and intuitive design, so all patients feel comfortable using the site regardless of technological literacy. Involved discussion and communication with clients, increasing the ability to understand and implement requirements professionally.

Projects

- 2023–Present **Wordle Assistant**, *Rust, WebAssembly, Chrome Extension*.
- Designed a Wordle companion based on information theory to select the word given prior guesses. Profiled and optimised the implementation through pruning, caching and build scripts to result in a 3,200x speedup compared to the original design. Moreover, adapted the solver to assist players interactively then altered the Rust program to run online via WebAssembly. Finally, integrated this binary into a Chrome extension, providing hints of the best word when playing Wordle online.
- 2022–Present **Georgegrainger.com**, *SvelteKit, SolidJS, Typescript, CSS, Figma*.
- Increased understanding of design, creation and implementation in two up-and-coming JS frameworks. Focused on clean and efficient CSS animations, with a reduced motion option to maintain accessibility. Cemented ability to communicate with external APIs, interfacing with Spotify to show top tracks and a live listening feed.
- 2022–2023 **Reinforcement Learning Research**, *OpenAi Gym, Third Year Project*.
- Simulated the development of substance use disorders and behavioural addictions by adapting traditional reinforcement models to include sub-optimal selection of addictive stimuli. Investigated the influence of habit formation and risk factors on brain motivation circuitry. Required formalising neurotransmitters, synapses and cognitive control while maintaining a set of assumptions to manage simulation complexity. Evaluated through comparison with real-world data and existing models to validate the model.
- 2021–2022 **Stendhal**, *Java, Open Source, Testing*, stendhalgame.org.
- Debugged and fixed issues on a large, 10,000-line open-source codebase using Eclipse, Ant, JUnit and Jenkins by writing custom unit and integration tests. Proceeded then to add features to the MMORPG. Taught how to navigate a new, unknown codebase and then make reasonable time estimates for development within the team.
- 2020–2021 **Symput**, *NextJS, Firebase, TailwindCSS*.
- Created a full-stack PWA symput.com for the inbuilt Android keyboard produced in first-year team project. Achieves above 90% on all Google Lighthouse metrics and 100% performance on Vercel analysis. Features include:
- Language Support for English, Chinese and Arabic
 - Authentication and Verification of accounts
 - Profile-based feedback system with the ability to create, like and edit posts
 - Serverless functions to moderate posts and delete account data for GDPR compliance