

# James Gardner

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Portfolio: [jgardner01.github.io](https://jgardner01.github.io)

GitHub: [github.com/JGardner01](https://github.com/JGardner01)

## Personal Statement

A highly motivated, detail-oriented final year MSci Computer Science student. Proficient in Java, C#, C, Python and JavaScript with experience in databases such as SQL and MongoDB. Able to think critically, manage time well and adapt to a variety of problems, with experience working as part of a team and collaborating on GitHub. Aspiring to further develop my software engineering skills and contribute to a forward thinking company through a graduate position. I have a full UK driving license.

## Education

### MSci. Computer Science with Industrial Experience (October 2021 – July 2025), Lancaster University

- Minimum Expected (High Upper Second Class Honours (2.1) Degree)

#### Third Year Project (HTML, CSS, JavaScript, Node.js, WebRTC)

- Developed a no app based, full stack, peer-to-peer communication system that allows secure voice, video, text communication and file sharing over a LAN, utilising WebRTC for encrypted peer-to-peer connections.
- Enabled users to create and manage Personal Area Networks (PANs) for secure, real time communication between trusted devices.
- Built a front end using HTML, CSS and JavaScript, proving an intuitive and user friendly experience.
- Developed a Node.js Express server to serve the client side application, delivering static assets.
- Implemented a Node.js based signalling server using SocketIO to manage WebRTC connection setup and facilitate the management of Personal Area Networks.
- Leveraged WebRTC for encrypted media and data transmission, ensuring privacy and security without storing or passing data through centralised servers.
- Deployed the system on Heroku using build packs.
- Conducted extensive unit and integration tests to validate system performance and stability.

#### Second Year Group Project (Java, Swing)

- Collaborated on developing an image editing and drawing application, similar to Microsoft Paint, using Swing.
- Gained experience with version control using GitHub.

#### Java Projects

- Developed a passive replication system for an auction house using Java RMI.
- Built a recursive descent syntax analyser for a simple programming language similar to Ada.
- Developed a graphical model of the solar system using Swing.
- Created a code guessing game, Codebreaker using Swing.
- Implemented recursive game logic for the game Minesweeper.

#### Python Projects

- Developed pure socket implementations of networking tools including Ping, Traceroute, a web server and a proxy server
- Utilised the Cryptography module to develop an AES encryption mode using AES-ECB, conduct a collision resistance attack on a custom hash function and create a custom HMAC (SHA256).
- Used SciPy and NumPy to program distributions, calculate Annualised Loss Expectancy (ALE), simulate Monte Carlo risk impacts and apply linear regression and linear programming for security optimisation.

#### Other Projects

- Enhanced an existing website to improve accessibility and responsiveness using HTML, CSS and JavaScript.
- Developed a K Nearest Neighbour (KNN) implementation for supervised image classification on the EMNIST dataset in MATLAB.
- Created a genetic algorithm to find the optimal path while navigating from one point to another between randomly generated obstacles in MATLAB.

### A-levels (2018 – 2020), Caroline Chisholm School

- Computer Science (A), Maths (C), Cambridge Technical Introductory Diploma in IT (Distinction\*)

## **GCSE's (2016 – 2018), Caroline Chisholm School**

- ICT (A\*), Maths (7), Computer Science (6), Biology (6), Chemistry (6), Physics (6), Spanish (6), English Language (4), English Literature (4), D&T: Graphic Products (C)

## **Relevant Experience**

### **Personal Projects**

#### **File Organiser (Java, JavaFX, Maven)**

- Developed a file organisation application that sorts files into predefined categories based on file type or date.
- Implemented automation management and system tray integration enabling the application to continue organising in the background.
- Enabled users to define and manage custom file extensions to sort beyond the predefined file extensions.

#### **URL Shortener (Python, Flask, HTML, CSS, JavaScript, MongoDB)**

- Designed and implemented a full stack URL shortening application using Flask for the backend and MongoDB for database management.
- Added custom features such as short URL link customisation, passwords, expiration dates and QR code generation.
- Integrated a user friendly dashboard for URL management and monitoring via sessions and user accounts.
- Utilised Google Safe Browsing API to enhance security by checking URLs against Google's database.

#### **Ludo 3D Virtual Board Game (Unity, C#)**

- Created a 3D digital implementation of the classic board game Ludo with computer controlled opponents.
- Implemented a rule-based propriety system for computer controlled opponent moves.

#### **Portfolio Website**

- Established a portfolio website using Jekyll and GitHub pages, showcasing university work and personal projects with detailed descriptions and demonstrations.

### **Virtual Internships**

#### **JPMorgan Chase & Co - Software Engineering Lite**

- Completed a virtual internship resolving a ticket for a system in the credit card rewards department.
- Developed a new Java class and wrote a comprehensive test suite to ensure functionality and reliability.

#### **Verizon - Cloud Platform**

- Simulated the development and testing of a hypothetical VPN for the cloud computing team using Python.
- Researched and presented findings on cloud security practices, gaining experience with application security and secure deployment strategies.

## **Employment**

### **Tesco Northampton South Extra – Store Assistant (November 2020 - Present)**

- Primarily work in the beers, wines and spirits department, with additional responsibilities in the grocery department as needed.
- Improved time management skills and the ability to work under pressure by handling multiple tasks during busy periods, such as setting up promotional displays while maintaining aisle appearance and stock levels.
- Collaborate closely with colleagues to maintain a well organised and efficient department.
- Developed strong communication skills through daily customer interactions, ensuring shopping experiences.

### **Ayres & Gardner – Construction Labourer (April 2024 – October 2024)**

- Assisted in various construction tasks including site preparation, material handling and supporting skilled workers on site.

## **Interests and Achievements**

- **Fitness:** Regularly attend the gym and take part in the Lancaster University Boxing Society.
- **Travel:** Passionate about exploring new destinations and learning about other cultures.
- **ICT Award:** Awarded best student in the year for ICT during Sixth Form.
- **Volunteering:** Helped organise local events such as village produce shows and charity coffee mornings.

## **References Available Upon Request**