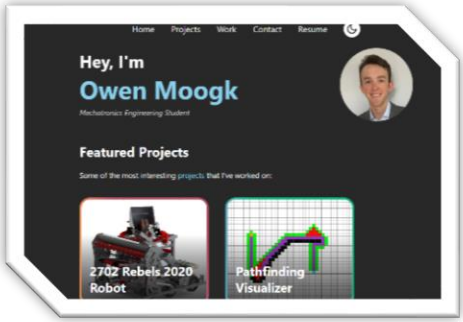
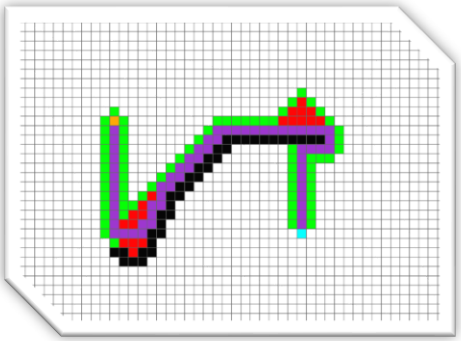
PROJECTS



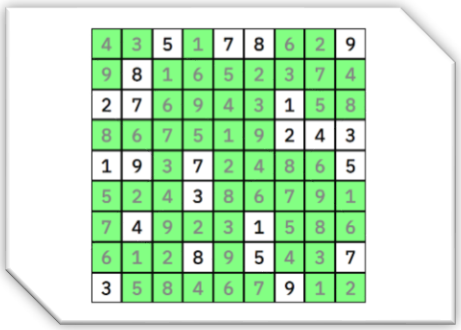
Personal Website

- Designed and built a personal website using **ReactJS**, to showcase personal projects.
- Iterated over many versions, optimizing code structure and design.
- Created and handled **API requests** for data storage and page functionality.
- Project URL: https://owenmoogk.github.io



Pathfinding/Sorting Algorithm Visualization

- Designed and programmed a variety of pathfinding and sorting algorithms in **Python** and **JavaScript**.
- Built websites using **ReactJS** to showcase a visualization of these algorithms.
- Implemented **pathfinding algorithms** including as A*, Greedy Best First Search, Dijkstra's Algorithm, BFS, and DFS.
- Implemented **sorting algorithms** including Merge Sort, Heap Sort, and Hoare and Lomuto Quick Sort.
- Built tools that allowed users to experiment with algorithm performance in different situations.
- Pathfinding Visualizer: https://owenmoogk.github.io/pathfinding-visualizer/
- Sorting Visualizer: https://owenmoogk.github.io/sorting-visualizer/



4	3	5	1	7	8	6	2	9
9	8	1	6	5	2	3	7	4
2	7	6	9	4	3	1	5	8
8	6	7	5	1	9	2	4	3
1	9	3	7	2	4	8	6	5
5	2	4	3	8	6	7	9	1
7	4	9	2	3	1	5	8	6
6	1	2	8	9	5	4	3	7
3	5	8	4	6	7	9	1	2

Sudoku Wave Function Collapse (algorithm)

- Designed and programmed an algorithm to solve a sudoku in **JavaScript**, modelling the problem as a modern **Wave Function**.
- Improved upon the common backtracking algorithm, with constraint propagation to vastly improve runtime.
- Built a website using **ReactJS** to visualize algorithm implementation.

Custom Mail Merge Application

- Designed a **full-stack** mail merge application using **Django** and **ReactJS**.
- Allowed users to customize templates and variables, with different contact fields.
- Implemented **Gmail API authentication**, allowing connection of external accounts.
- Stored user data in an **SQL Database**, serving API requests with **Python** and a **REST API**.
- Project Repository: https://github.com/owenmoogk/email-bot-fullstack

SimpleLib – Data Structures and Algorithms Library

- Designed, and programmed a **Data Structures and Algorithms** library in **Python**.
- Implemented data structures including Linked Lists, Binary Search Trees, Hashmaps, and Graphs.
- Implemented algorithms including tree traversal and inversion, graph pathfinding, and binary tree sorting.
- Allowed for user customization of algorithm implementation, including hashing function ranges and porting from other forms data storage.
- Implemented simple algorithms and functionality (such as hexadecimal conversion, data analysis tools, and much more)
- Project Details: https://owenmoogk.github.io/simplelib-documentation

These are some of my favourite and most applicable projects.

For a complete list of projects and some details please visit my website's project page, located at:
https://owenmoogk.github.io/projects