

# Hector Maddock-Greene

## About Me

A highly experienced software engineer with 10+ years of experience, strong Typescript and Rust skills, and a passion for delivering high quality customer experiences. Has a proven track record of writing efficient, performant, and maintainable code.

At Wren Kitchens, led a team whose product won the Real IT awards 2020 and improved customer engagement. Also improved the performance of multiple sub-systems within the Kitchen Planner software by 99%.

## Hobbies and Interests

I've always had a deep interest in low level programming, karate, world building, and wood working. I started programming with C when I was 15. Over the years I've tried many languages; some of my favourites are C, Zig, Rust, and Odin, but I've also enjoyed building projects in JS/TS, Go, C++, D, Java, and Python. And I've experimented with C#, Lua, Squirrel, and probably a bunch more that that I'm not remembering.

I've built toy compilers, game engines, operating systems, and even a WASM runtime (partially). All of which have been invaluable learning experiences, but were also just a lot of fun to work on. They've taught me a lot about memory layout, SIMD, multi-threading, the importance of different data structures and algorithms, and so much more.

Back when I was young I achieved my black belt in Karate after 6 years of training, but I stopped shortly after. I've recently picked up Karate again to help keep myself fit.

World building has always been an enjoyable past time for me. Inventing characters, places, and events is often a relaxing way to exercise my creativity.

My wife and I got a new TV recently and we needed a TV stand. I'm new to wood working, but I decided to build one from scratch and it actually turned out pretty good.

## Details

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Github:	<a href="https://github.com/rope-hmg">https://github.com/rope-hmg</a>
Skills:	Mentoring, Linear Algebra, Geometric Algebra, Project Management, Scrum, ECS
Projects:	<a href="https://github.com/rope-hmg/Magical-Magic-Mages">https://github.com/rope-hmg/Magical-Magic-Mages</a> <a href="https://github.com/rope-hmg/Herbal-Candy">https://github.com/rope-hmg/Herbal-Candy</a>

# Ascend

## Innovation Lead

### Achievements

- Maintained the Three.js shutter visualisation web application.
- Prototyped web based cloth simulations using JavaScript, and WebAssembly.
- Prototyped a physically based rendering engine using WebGL, and WebGPU.
- Prototyped a Position-Based Rigid Body Dynamics engine for simulation of blinds with both rigid, and deformable components.

From:	June 2024
To:	Current
Where:	Ascend Digital Solutions Ltd, Bartle House, Oxford Court, Manchester, M2 3WQ
Languages:	JavaScript, Typescript, Odin
Frameworks:	Vue.js, Svelte
Technologies:	Git, Github, Jira, Mac OS, WebGL, WebGPU, WebAssembly
Skills:	Linear Algebra, Reading and Translating Papers, Calculus, Project Management

# EnAppSys

## Software Lead Developer

### Achievements

- Maintained the frontend web application.
- Worked with the Java backend.
- Led a team of 3 developers implementing various improvements to both the frontend and backend systems.

From: November 2023

To: April 2024

Where: EnAppSys Ltd,  
Blenheim House,  
Falcon Court,  
Stockton-on-Tees

Languages: JavaScript, Typescript, Java

Frameworks: React.js

Technologies: Git, Assembla, AWS,  
Windows

Skills: Mentoring, Project  
Management, Scrum

# Wren Kitchens

## Senior Software Engineer (S2)

### Achievements

- Senior most engineer on the team.
- Maintained the Kitchen Planner and Node.js Backend.
- Prototyped a high performance, lockless, multithreaded job system in Typescript using WebWorkers, Atomics, and SharedArrayBuffers.
- Implemented a path finding system using Dijkstra's algorithm for the Procedural Kitchen Tours project.
- Worked closely with the 3D team using Unity and C#.
- Removed redundant updates in the automatic worktop resize system for an 80% speed improvement.
- Utilised more efficient data structures and algorithms in the automatic décor spawning system for a 99% speed improvement. In some cases reducing time and space complexity by multiple orders of magnitude.
- Prototyped a WebGL renderer as a replacement for the HTML5 canvas renderer as a way to improve application performance.
- Implemented a real-time, flame graph visualisation tool for tracking application performance in Rust.

From:	August 2022
To:	April 2023
Where:	Wren Kitchens Limited, The Nest, Falkland Way, Barton-upon-Humber, DN18 5RL
Languages:	JavaScript, Typescript, C#, Rust
Frameworks:	React.js, Node.js, Unity, Webpack
Technologies:	Git, Jenkins, AWS, Docker, Mac OS, WebGL
Skills:	Mentoring, Linear Algebra, Geometric Algebra, Project Management, Scrum, ECS

# Wren Kitchens

## Senior Software Engineer (S1)

### Achievements

- Maintained the Kitchen Planner and Node.js Backend.
- Led a team of 6 engineers implementing architectural improvements.
- Led a team of 2 engineers cleaning up technical debt.
- Was involved with high level visioning with stakeholders discussing how best to implement design wires and requested features.
- Prototyped a type safe Entity Component System (ECS) in Typescript.
- Prototyped a loop based architecture to replace the complex event driven system. The main goal was to improve data flow reasoning among developers.
- Implemented a spatial partitioning system to improve collision detection performance.
- Implemented a work log and time track tool in Rust.
- Implemented a set of tools for development environment management in Rust.
- Implemented a tool for visual debugging of scenes in Three.js with another engineer.
- Batched collider updates avoiding expensive calculations, resulting in a 99% speedup for the automatic worktop spawning system.

From: July 2020

To: July 2022

Where: Wren Kitchens Limited,  
The Nest,  
Falkland Way,  
Barton-upon-Humber,  
DN18 5RL

Languages: JavaScript, Typescript, C#,  
Rust

Frameworks: React.js, Node.js, Unity,  
Webpack

Technologies: Git, Jenkins, AWS, Docker,  
Mac OS

Skills: Mentoring, Linear Algebra,  
Geometric Algebra, Project  
Management, Scrum, ECS

# Wren Kitchens

## Software Engineer

### Achievements

- Maintained the Kitchen Planner and Node.js Backend.
- Ran the 3 month graduate scheme for a year and mentored 4 intakes of graduate developers.
- Mentored junior developers.
- Improved the speed of the documentation generation system by 88%.
- Reduced the complexity of the Webpack based build system by trimming the line count from 5000 to 250 while also introducing new features.
- Added a new feature to the build system that allowed outputting different artefacts based on the product being built.
- Reduced the build time of the Planner application by 10 minutes.
- Used build flags to enable or disable software features resulting in a reduction of the load time of one product by 81%.
- Handled merging of completed work into master and the subsequent deployment of those features into live.
- Worked as an engineer on the US conversion team.
- Led a team of 3 engineers implementing small improvements on the Planner product.

From:	July 2019
To:	June 2020
Where:	Wren Kitchens Limited, The Nest, Falkland Way, Barton-upon-Humber, DN18 5RL
Languages:	JavaScript, Typescript, C#,
Frameworks:	React.js, Node.js, Unity, Webpack
Technologies:	Git, Jenkins, AWS, Docker, Mac OS
Skills:	Mentoring, Linear Algebra, Geometric Algebra, Project Management, Scrum

# Wren Kitchens

## Junior Software Engineer

### Achievements

- Maintained the 500kloc+ Kitchen Planner software.
- Maintained the 10kloc+ Node.js Backend.
- Worked as an engineer on the Bugs team for 10 months.
- Fixed a bug that led to a 50% improvement in the speed of the canvas renderer.
- Led a team of 2 engineers on the Dual Screen project. Allowing the web based planner software to communicate in real time with the Unity 3D visualisation software.
- Won the Real IT Awards 2020 for the Dual Screen project
- Became familiar with the browser's profiling tools (flame graph, call tree, heap snapshot, etc) to improve the performance of the Kitchen Planner software.
- Used a more time efficient algorithm to optimise the speed of the canvas hover animation by 60%.
- Identified and updated slowness in one of the Planner's hottest loops. Resulting in a 66% speedup of the automatic décor spawning system. As well as minor speed ups in other sub-systems.
- Migrated 300,000+ images from Cloudinary to S3 using a Python script.

From: July 2018

To: June 2019

Where: Wren Kitchens Limited,  
The Nest,  
Falkland Way,  
Barton-upon-Humber,  
DN18 5RL

Languages: JavaScript, Typescript, Python,  
C#

Frameworks: React.js, Node.js, Unity,  
Webpack

Technologies: Git, Jenkins, AWS, Docker,  
Linux, Websockets

Skills: Linear Algebra

# Hallmark Panels

## JavaScript Developer

### Achievements

- Was the sole member of the IT department, so my role involved all aspects of DevOps, Development, QA, and Helpdesk.
- Wrote and maintained the 10kloc Door Builder web application.
- Wrote and maintained backend services using Node.js, Go, and Dart.
- Wrote and maintained the Factory Progress web application.
- Wrote and maintained other web forms and tools for other business areas.
- Managed the Digital Ocean web servers via SSH.
- Managed the MongoDB databases.
- Converted all JavaScript codebases into Typescript.
- Updated from AngularJS to Angular 2.0 and beyond.
- Wrote some web scraping tools in Python to help automate other roles within the business.

From:	January 2014
To:	May 2018
Where:	Hallmark Panels Limited, Valletta House, Valletta Street, Kingston-upon-Hull, East Yorkshire, HU9 5NP
Languages:	JavaScript, Typescript, Dart, Go, Python
Frameworks:	AngularJS, Angular, AngularDart Node.js, Webpack
Technologies:	MongoDB, SSH, Git, Linux



# Ebuyer

## Junior Service Desk Technician

### Achievements

- Engaged in user support interactions via telephone, chat, and email platforms.
- Addressed user generated service desk concerns and decided when to escalate problems to specialist team members.
- Configured hardware, devices, and software for employee work stations.
- Configured and tested new software and hardware.
- Removed malware and other threats from laptops and desktop systems.
- Installed, configured, and maintained computer and networked systems.

From: February 2010

To: January 2011

Where: Ebuyer (UK) Limited,  
Howden,  
East Yorkshire,  
DN14 7UW

Skills: Communication, Debugging,  
Configuration