

George McDonagh

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<https://github.com/georgeous>

Experienced Software Engineer with a strong background in real-time systems, performance optimization, and high-efficiency programming. Proven expertise in modern C++ and complex system design, with a deep understanding of low-latency computing. Passionate about building smart, high-performance software.

[04/2025 - 10/2025] @ Illuvium (Remote; Contract o/IR35)

Senior C++ Engineer

C++17, Unreal Engine 5 (UE5)

- Responsible for maintaining and extending functionality of the backend real-time simulations in C++17, **using STL and Boost libraries** extensively.
- Optimised **custom network exchange protocols** to minimise message size and maximise throughput.
- Refactored older systems to decrease unnecessary complexity and improve maintainability.

[09/2023 - 03/2024] @ Nequinox Studios (Remote)

Senior Systems Engineer

C++, Unreal Engine 5 (UE5)

- Performed extensive profiling (**Valgrind, Intel VTune, Wireshark**) which was used to inform **optimizations across multiple real-time systems**, e.g: **client-server** replication. **Average ~25% performance increase.**
- Designed, implemented, and documented off-screen **parallel** rendering pipeline for procedurally generated UI icons.
- Conducted engineering R&D for US-based clients, delivering my findings as written documents and group presentations.

[07/2022 - 01/2023] @ Emperia Ltd (Remote; Contract o/IR35)

Unreal Engineer

C++, Unreal Engine, Python, C#

- Spearheaded the development of an in-house automation tool for processing and rendering 3D environments in **Unreal Engine, C++**.
- Built **Python** middle-ware to handle exchange of content (Finished renders, JSON data) between Unity and Unreal Engine.
- Worked with backend server engineers to design an API for serving our 3D content libraries to user applications.

[01/2022 - 07/2022] @ Baya Dynamics (Remote; Contract o/IR35)

Lead Programmer

C++, UE4/UE5, Node.js

- Redesigned and rebuilt the company's flagship piece of software under serious time constraints, with great success and stakeholder satisfaction. Project completed in 3 of the 5 months expected due to excellent project management and software design.
- Developed from scratch a web application (**Node.js, HTML, CSS**) to connect user display and input to high-fidelity 3D applications running on our servers (**UE Pixel Streaming**).
- Configured and managed high-performance **AWS** servers to serve the application to users.
- Oversaw the hiring process of a small team of Junior developers. Offered mentorship and support throughout my contract.

[06/2018 - 05/2021] @ Team 17 Digital Ltd

Programmer

C++, C#, Unity, Unreal Engine, JavaScript

- Worked on five high-profile game titles, optimizing performance for real-time systems on **Xbox, PlayStation, Windows, and Linux (UE, C++, Unity, C#)**
- Designed and implemented custom low-latency network protocols on top of **UDP** and **TCP/IP** for multiplayer gameplay (**C#**).
- Led build automation and deployment for various platforms, cutting the time between code submission and QA testing in half.

University

BSc in Computer Science & Games Programming – De Montfort University (06/2018) – 2:1 Honours

Technical Skills

- Programming Languages: C++(17, 20, 23), C#, C, JavaScript, MySQL, Python
 - Networking: **Deep understanding of Client/Server architecture, real-time networking architecture**, TCP/IP, UDP socket programming, authentication, RESTful API design
 - Graphics: **OpenGL, Vulkan, knowledge of modern rendering pipelines**
 - General: **Multithreaded programming**, performance profiling tools (**Valgrind, RenderDoc, VTune, perf**).
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Personal Projects

See: <https://georgemcdonagh.dev>