Jack Howells

C++ Software Engineer

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🪪 Profile

C++ Engine Software Engineer with 18 months of professional experience working on performance-critical real-time engine and gameplay systems in both proprietary engines and Unreal Engine 5. Recently graduated from a Level 7 games programming apprenticeship *with distinction*.

💼 Development Experience

04/2025 – 07/2025
Leeds

Red Kite Games Ltd
Professional Placement
Credits: *Unannounced Project*
- Profiled ECS performance with **Unreal Insights** and debugged physics issues with the **Havok Visual Debugger**, increasing the maximum entity count from hundreds to thousands.
- Designed and implemented a multi-surface entity navigation mechanic using the **Havok API**, iterating on prototypes with **Unreal Blueprints** before finalizing with **C++**.
- Wrote and maintained unit tests within a **CI pipeline** powered by **Unreal Horde**, which tested the success rate of entities navigating in the physics system.
- Contributed to **Swarm Code reviews** and resolved complex merge conflicts using **Perforce Streams**.
- Operated within an **Agile SCRUM** framework using **Jira**.

01/2024 – 07/2025
Sheffield

Sumo Digital Academy
Level 7 Games Programming Apprentice
Credits: *Snake Party* 🔗 | *Nutmeg* 🔗 | *Still Wakes the Deep (via Oil Strike '75)* 🔗
- Investigated and resolved GPU performance bottlenecks using **RenderDoc** and **PIX**, improving rendering performance by **78.5%** after identifying unoptimized post-effects and unnecessary overdraw.
- Developed a **split-screen deferred rendering pipeline** for a proprietary engine using **HLSL** and **C++** with **DirectX 11**.
- Developed an offscreen canvas texture renderer using **DirectX 11**.
- Created an automated asset integration toolchain for a proprietary game engine, streamlining multi-disciplinary collaboration between artists and developers.
- Designed and developed a procedural mesh generation system for the player character in *Snake Party* using **C++** and **HLSL**.
- Developed a 1D bloom Gaussian kernel generator in **Python** with **MatPlotLib** to produce usable **HLSL** static arrays.
- Created editor tools for sound designers and artists using **ImGui** in **C++**.
- Wrote unit tests with the **Catch2** framework in a **CI environment** via **TeamCity**.
- Contributed to large agile teams using **Azure DevOps** within a **SCRUM** framework and participated in **50+ code reviews** via **Helix Swarm**.
- Maintained version-controlled software using **Perforce** and **Git**.

🎓 Education

10/2018 – 07/2022
Bath, UK

Physics BSc (2:1 - 64%)
University of Bath
- Developed a strong 3D mathematical foundation in Linear Algebra, Calculus, and Statistics.
- Programmed mathematical models and algorithms using **C** and **MATLAB**.
- Performed data analysis on laboratory data using **pandas** and **MatPlotLib** libraries in **Python**.

📂 Projects

03/2025   **7 Days Til' Satan** 🔗
Unity | C# | Audio | Game Jam
- Designed and implemented a dialogue system with Animalese-style vocalisations.
- Finished **3rd overall** for emotional delivery.

10/2024   **Frogi** 🔗
Godot | GDScript
- Delivered a fully functional arcade game in 48 hours for Ludum Dare 56, handling all programming, audio, and artwork while maintaining stability and performance.

🌐 Languages

English — Native/Bilingual   **Welsh** — Native/Bilingual

Arabic — Basic

🧠 Skills

C++ • HLSL • Python • HTML • CSS • Havok • Unreal Engine • Unity • Godot • Git • Perforce • RenderDoc • PIX • VTune • Azure DevOps • Jira • Visual Studio

☣ References

Dave Moore, *Lead Programmer*, Sumo Digital
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Andrew Greensmith, *Technical Director*, Red Kite Games
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Jacob Habgood, *Director of Education Partnerships*, Sumo Digital
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