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# Liam Oliver Stewart

*Aspiring programmer looking for a yearlong industrial placement*

2nd Year Game Programming Student at the University of Staffordshire

## Technical Skills

- Languages: C++, Python, C#, HTML/CSS
- Libraries: OpenGL, GLFW, DirectX11, SDL, SFML, PyGame, JSON, ImGui, ImGuizmo
- Tools: Git, Unity, Unreal Engine 5, Trello, Visual Studio, RenderDoc

## Projects

**Luna 3D game Engine – Individual** (project page) (*C++, DX11, OpenGL)* May 2025 – Present

- Developing a Unity-like engine in C++ with an extensible architecture, supporting multiple render API implementations
- Built a CPU cache-optimised Entity Component System and custom OpenGL and DirectX 11 render pipelines
- Integrated ImGui/ImGuizmo editor, JSON scene serialisation, and Lua scripting using the sol2 library
- Developed a custom debug shader to better understand what the shadow cascades had rendered when facing issues

**Invasion Madness – Individual - University** (project page) (*C++, SDL)* February 2025 – May 2025

- Developed a retro arcade shooter for the Evercade handheld using Docker for cross-compilation
- Gained experience building for constrained hardware, applying optimisations such as object pooling and efficient memory usage
- Implemented a modular scene management system to support multiple game states and levels

**RTS Game Engine – Emperors Armory Studio – Collaborative** (project page) (*C++, SFML)* December 2023 – September 2024

- Prototyped an RTS game engine in C++ to simulate hundreds of agent interactions
- Dedicated time to learning Git features such as branching and resolving merge conflicts
- Built an agent manager using polymorphism to handle unique entity behaviours
- Engineered Python scripts to automate terrain generation, significantly reducing manual design time
- Led a sub-team of 3 programmers, collaborating using Discord and GitHub

**Cryogen Boss Fight – Individual – University** (project page) (Unity, C#) November 2024 – February 2025

- Built a recreation of the Cryogen boss fight from Calamity, a mod for Terraria, using the Unity Engine
- Utilized a finite state machine for each of the bosses' phases, with clear transitions developed for each phase
- Used Unity's shader and particle system to create custom on-hit effects for the player and boss
- Developed a custom "gun inventory" system to store which gun the player was currently using, utilising polymorphism to give each gun unique functionality

## Education

BSc (Hons) Computer Games Programming, University of Staffordshire – Achieved first class in Graphics Programming, Bespoke Platform Development, and the Unity modules. Achieved a second in the programming fundamentals and UE5 modules.

## Employment

**Factory Worker, Lush, Poole, Full-time** Summer Job 2025

- Worked in a 3–5-person team maintaining production flow, often acting as team lead to meet quotas while ensuring quality and safety standards.

**Kitchen Porter, Pi's Pizza, Poole, Part-time** Summer Job 2024

- Supported chefs with cleaning and prep in a fast-paced environment, following all food and health safety procedures per Level 2 certification.

**Interests –** Enjoy problem-solving games such as Factorio for their constant addictive, iterative progression. Also participate in game jams individually and in teams and occasionally enjoy playing pool with friends.