

# Darren Sweeney

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**Portfolio:** darrensweeney.net

## Career Overview

Graduate from Institute of Technology Carlow with a first class honors degree. Interned at Romero Games where i built tools and engine systems. Worked on personal projects outside of college that cover areas such as graphics, animation, physics and gameplay programming all written from scratch in C++.

## Work Experience

**Romero Games** April 2018 - August 2018  
Game Programming Intern.  
Building tools for artists and designers and engine systems to support runtime gameplay features with C# using the Unity game engine. Communicating with the team on the milestone schedule for the publisher deliverables.

## Technical Experience

### Programming Languages

C++, GLSL, C#.

### Source Control

GitHub, Perforce.

### Math & Physics Skills

3D Math, Linear Algebra, Newtonian Dynamics.

## Education

**Institute of Technology Carlow** September 2015 - April 2018  
BSc Computer Games Development.  
Graduate with a 1:1 first class honors degree while getting an average 85 percent grade. I achieved a grade of 94 percent in my final year project. Can provide results on request.

## Personal Projects

### Animation System - C++

- Created the skeleton and joint hierarchy by parsing in Collada files.
- Created everything from scratch including the maths library.
- Implemented animation blending between a walking and running animation clip.
- [YouTube Video](https://www.youtube.com/watch?time_continue=2&v=hq2OXM9GPWk): [https://www.youtube.com/watch?time\\_continue=2&v=hq2OXM9GPWk](https://www.youtube.com/watch?time_continue=2&v=hq2OXM9GPWk)

### Physics Demo - C++

- Minimized the number of collisions tests in a scene of rigid bodies with a broad and narrow phase collision system.
- Created a stable interactive cloth using constraint based physics using verlet integration.
- [GitHub](https://github.com/DarrenSweeney/3D-Physics-Engine): <https://github.com/DarrenSweeney/3D-Physics-Engine>

### Ray Tracing - C++

- Optimized collision tests for mesh objects by implementing a bounding volume hierarchy using a median split method. Complexity went from  $O(n \log n)$  to  $O(\log n)$ .
- Implemented features such as depth of field, motion blur and a variety of materials such as transparent and metallic surfaces.
- Built a multithreaded system to split render workload across multiple CPU cores.
- [GitHub](https://github.com/DarrenSweeney/Dazzer_Ray): [https://github.com/DarrenSweeney/Dazzer\\_Ray](https://github.com/DarrenSweeney/Dazzer_Ray)

### **Graphics Tech Demo - C++, GLSL**

- Implemented advanced rendering techniques such as instancing, dynamic shadow mapping and dynamic cube mapping of the environment.
- Finished 11 demos in total.
- [GitHub](https://github.com/DarrenSweeney/OpenGL-Tech-Demo): <https://github.com/DarrenSweeney/OpenGL-Tech-Demo>

### **Celestial Ascension - C++**

- Implemented a bloom post-processing lighting effect with GLSL.
- Created a custom background grid physics simulation with springs and point masses that react to bullets being fired and explosions on screen.
- Built the UI system for the main menu and gameplay.
- [YouTube Video](https://www.youtube.com/watch?v=C0UE3gldcoo): <https://www.youtube.com/watch?v=C0UE3gldcoo> (Gameplay)

### **Fusion Rush - C++**

- Implemented an online leaderboard, account creation and login for players.
- Created custom hash table and hash function for game asset resource management while minimizing hash collisions and retrieval time for game assets.
- Wrote the entire engine myself which includes the 3D renderer in OpenGL.
- [GitHub](https://github.com/DarrenSweeney/Fusion_Rush): [https://github.com/DarrenSweeney/Fusion\\_Rush](https://github.com/DarrenSweeney/Fusion_Rush)

### **Global Game Jam 2016 - C++**

- Implemented gameplay systems such as wall running, jumping animation and sound output in C++.
- Worked alongside another programmer and audio engineer for 48 hours,
- [YouTube Video](https://www.youtube.com/watch?v=cDCGxDDiBQk): <https://www.youtube.com/watch?v=cDCGxDDiBQk> (Gameplay)

### **Awards**

Won Best in Visual Engineering at Games Studio Ireland 2018.

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Won Best Overall Game at Galway Game Jam #3.

Winner of college RoboCode artificial intelligence competition.

### **References**

John Romero  
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