# Liam McKenna

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## Summary

Master's student in Computer Science specializing in computer graphics and video game development, with demonstrable proficiency in C++, C#, GLSL, and HLSL. Expertise in designing robust and streamlined software systems, formed through extensive development experience in Unity, Unreal Engine, and self-authored 3D application programming. Eager to gain real-world experience in the design and development of commercial video games and video game engines.

## Education

**Master of Science (M.S.), Computer Science** — Expected Spring 2026
*University of Florida, Kyoto University* — *Gainesville, FL*

**Bachelor of Science (B.S.), Computer Science** — Summer 2024
*University of Florida* — *Gainesville, FL*

- GPA: 3.58/4.00 (Cum Laude)
- Minor: Digital Arts and Sciences (Game Development)

## Experience

**Academic Researcher** — Fall 2025 - Present
*Kyoto University — Project AirSim* — *Kyoto, JP*

- Studied and worked within Unreal Engine's C++ source code to develop a fork used for computer vision research
- Implemented advanced rendering techniques into Unreal Engine 5 through self-authored HLSL shader development

**Academic Researcher** — Jan 2025 - Summer 2025
*University of Florida SurfLab* — *Gainesville, FL*

- Investigated experimental approaches to producing global illumination in a real-time OpenGL environment
- Attained performant pixel-accurate shadow casting of complex NURBS surfaces with novel use of past research

**Software Development Intern** — Summer 2023
*United Wholesale Mortgage* — *Pontiac, MI*

- Garnered applied experience in the agile development cycle by operating under the scrum framework
- Developed an integrated software stability inspector with C# for end-to-end use in proprietary software

## Projects

**APGP | Multipurpose Custom 3D Rendering Environment** — Fall 2024 - Summer 2025
*C++, OpenGL, GLSL* — GitHub

- Created a highly modular real-time 3D application in C++ using the OpenGL graphics API
- Implemented an Entity-Component System (ECS), Scene Graph, and support for Physically-Based Rendering (PBR)
- Engineered fully dynamic Lua script insertion, asset management, and scene generation at runtime

**PowerLine | Original Minecraft Multiplayer Minigame** — Fall 2025
*Java* — GitHub | Play Game

- Led the full development cycle of a novel multiplayer game mode for Minecraft through custom plugin programming
- Achieved publication on the popular and selective Minecraft minigame hosting platform, StickyPiston

**Topposition | Procedurally Generated Game Built on Custom 2D Engine** — Fall 2023
*C++, SFML* — GitHub | Presentation

- Developed a feature-complete strategy game in a proprietary engine boasting a procedurally generated terrain system
- Presented a lecture to UF's game development club, DevLUp, on the lessons learned throughout development

**Itch.io Showcase | Extended Game Development Portfolio** — Fall 2022 - Present
*Unity, C#, Batch* — Portfolio

- Attained extensive experience working in Unity and C# scripting from the development of several unique projects
- Achieved multiple top placements and academic recognition in game jams, hackathons, and class projects

## Technical Skills

**Languages**: C++, C#, GLSL, HLSL, Lua, Java, Batch

**Tools & Frameworks**: Unreal Engine, Unity, OpenGL, DirectX, Blender, Maya, Visual Studio

**Specialized Knowledge**: Graphics Programming, Game Engine Architecture Design, 3D Modeling (Portfolio)