# Andrew Knowles

(631) 316 – 0130 ✆
ajknowles21@gmail.com ✉
https://ajknowles11.github.io 🌐

## SKILLS

- Programming:
  C, C#, C++, Python, Java
- 3D, VR, AR software and game development (desktop, mobile)
- Game Engines: Unreal, Unity, Godot
- Linear Algebra and Multidimensional Calculus
- Communication and cooperation
- Willingness to learn and listen to feedback

## EDUCATION

**08/2020 – 05/2024**

**Carnegie Mellon University** – Pittsburgh, PA

- B.S. in Mathematical Sciences, Discrete Math and Logic Concentration
- Minor in Game Design
- Relevant Coursework:
  - Intro to Computer Systems, Computer Graphics, Linear Algebra, Combinatorics, Parallel and Sequential Data Structures and Algorithms, Principles of Functional Programming
- Active member, Game Creation Society

## PROJECTS

**01/2023 – 05/2023**

**MyScotty3D** – 3D graphics package for CMU's 15-462: Computer Graphics
*C++*

- Implemented algorithms for rasterization, raytracing, animation, and mesh geometry operations for use with CMU's educational graphics package.

**01/2023 – 05/2023**

**Project Horus VR** – VR boss-rush action game, featuring desert robots
*Unreal Engine 5.1*

- Designed, implemented enemy AI, integrated animations with VR combat system.

**01/2023 – 05/2023**

**Cyber Sleuth AR** – Mobile AR mystery game using Niantic Lightship ARDK
*Unity Engine*

- Designed flexible dialogue and progression system for story-driven gameplay.
- Utilized Niantic VPS to place persistent objects in real-world space on campus.

**09/2022 – 01/2023**

**Panarctica** – Vertical slice FPS mission in airships above a frozen world
*Unreal Engine 5.1*

- Lead programmer – designed and implemented AI, animations, weapons.

## WORK EXPERIENCE

**06/2023 – CURRENT**

**Mixed Reality Research Assistant,** CMU School of Design – Pittsburgh, PA

- Developed custom app for in situ welding training and guidance in Unity for use with Meta Quest Pro and integrated welding helmet.
- Wrote shaders for overlay visuals, modified Java plugin to collect additional sensor data through headset USB-C port.
- Collaborated with local industrial workshop for on-site demos with students, collecting feedback and iterating on designs.