

Alice Liu

alikel1@stanford.edu • (516) 519-9737 • aaeliu.github.io

EDUCATION

Stanford University
M.S. in Computer Science, Systems

Sep 2023 - Dec 2025
Stanford, CA

Stanford University
B.S. in Computer Science, Graphics + Minor in Mathematics

Sep 2021 - June 2025
Stanford, CA

- Relevant Coursework: Computer Systems, Computer Graphics, Linear Algebra, Algorithms, Computer Vision, Parallel Computing, Animation and Simulation, Operating Systems, Compiler Optimizations and Principles

EXPERIENCE

High-Performance Systems and Graphics Group (Stanford University)
Graphics Engineer Intern

June 2024 - September 2024
Stanford, CA

- Developed an interactive WebGPU application for creating human animations with a novel diffusion model backend.
- Implemented correct lighting, shadow mapping, and depth buffering for a 3D scene using WebGPU's rendering pipeline.
- Added advanced user editing capabilities: dragging around 3D rotational/translational joint widgets, creating and modifying keyframes, saving and loading animations and an in-depth logging system.

Virtual Human Interaction Lab (Stanford University)
Virtual Reality Developer

September 2023 - June 2024
Stanford, CA

- Developed VR and AR applications for the Meta Quest 3 in Unity and C# for research studies examining human behavioral and psychological interactions with VR/AR technologies. An interactive VR Passthrough demo was showcased at the California Academy of Sciences.
- Engineered immersive virtual environments that supply real-time responsive audio, haptic, and visual feedback to player interactions with objects and menus. Maintained complex scenes with object-oriented programming paradigms.

The Movement Lab (Stanford University)
Undergraduate Researcher

June 2023 - September 2023
Stanford, CA

- Explored the use of Unreal Engine 5 for creating realistic crowd simulations in virtual cities under Dr. Karen Liu.
- Implemented virtual agent movement and pathfinding by running search algorithms over the environment's ZoneGraph to navigate between two points. Used Reciprocal Velocity Obstacles (RVOs) to avoid collisions between 2 agents.

SHAPE Lab (Stanford University)
Research Intern

May 2022 - September 2022
Stanford, CA

- Developed Python scripts to automate the binding of meshes to armature rigs for the research pipeline of examining how to create automated 2D accessory rigs based on simulated 3D cloth physics. Additionally modelled 3D garment meshes.

PROJECTS

Parallelized Ray Tracer

May 2024

- Developed a thread-based CPU ray tracer from scratch with C++, OpenGL. Keyboard controls the scene in real-time.

Parallelized 2D Circle Renderer

Nov 2023

- Implemented a parallelized renderer for 2D circles using CUDA focusing on optimizations in memory/cache usage. Implementation speed outperformed reference solution by margin of 3x; placed top 5% on class leaderboard.

Path Tracer

Feb 2023

- Implemented a path tracer in C++ for coursework. Implementation realistically renders shadows and utilizes Bounding Volume Hierarchies (BVH) to accelerate computation of the scene.

Bee Pinball

Oct 2022

- Implemented a pinball game in JavaScript using p5.js. Used SDFs (Signed Distance Fields), bounding boxes, and ray-marched collision detection to handle collisions. Game was voted 2nd best in a class of 60+ students.

SKILLS

Programming Languages & Technologies: C++; C#; Python; Java; JavaScript; HTML; CSS; OpenGL; WebGL; WebGPU; Vulkan; NumPy; Three.js; Unity; Unreal Engine; Blender; Maya; Houdini;