Zachary Leong

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Education

University of Pennsylvania Philadelphia, PA
BSE in Digital Media Design, GPA: 4.0/4.0 *May 2028*

- Coursework: Computer Graphics, Advanced Rendering, Data Structures and Algorithms, Linear Algebra, Computer Systems, Operating Systems, 3D Modeling, Procedural Design Systems, Computer Animation

Experience

Teaching Assistant Janurary 2025 - Present
CIS 4600 Interactive Computer Graphics *Philadelphia, PA*

- Host office hours to help students debug C++ projects in scene graph, rasterization, OpenGL, half-edge mesh
- Responsible for grading exams and homework, and answering conceptual and debugging questions on Ed

CIS 1600 Discrete Math

- Led recitation committee, organized course material, collaborated with the professor to coordinate content
- Co-led weekly recitations of 15 students and held office hours in logic, graph theory, and probability

Research Intern October 2024 - Present
GRASP Sung Robotics Lab *Philadelphia, PA*

- Developed GPU-accelerated methods to efficiently compute distances between 3D CSC Dubins paths
- Designed user-friendly GUI for a 3D editor using PyQTGraph and PyOpenGL in a team of three
- Developed raycast-based selection and transform gizmo systems to enable intuitive user interaction

Student Chapter Vice President August 2025 - Present
ACM SIGGRAPH UPenn Chapter *Philadelphia, PA*

- Organized modeling, sculpting, animation workshops and social events to engage 30+ members
- Led a 2+ hour masterclass on procedural PBR and stylized shaders in Blender for 20+ attendees
- Contributed 25+ hours as a student volunteer at SIGGRAPH 2025, supporting conference operations

Game Developer August 2024 - Present
UPenn Game Research and Development Environment Club (UPGRADE) *Philadelphia, PA*

- Built *Descent*, an endless descent on a snowboard down procedurally generated terrain in a team of four
- Created a fast-paced 2D platformer cooking game in 24 hours, winner of Penn UPGRADE Fall '24 Game Jam
- Work with a 30+ member team on *Catanks*, a single-player action-adventure game published on Steam

Projects

Space Minecraft C++, GLSL, OpenGL, Qt

- Collaborated in a team of three to create a voxel game engine supporting spherical planets in a solar system
- Contributed debug GUI, cascaded shadow maps, biome blending, procedural planets and foliage scattering
- Optimized performance by using compute shaders, multithreading, terrain chunking, and console profiling

Origami Folding Simulation Houdini, VEX

- Simulated crane folding animation in Vellum by computing stretch and bend constraints with VEX
- Developed UV-based morphing for curated meshes with differing topology, enabling paper-like folding

Building Generator Tool Houdini, VEX

- Built a modular HDA system for customizable building generation, supporting multiple roof styles
- Developed Python viewer states to enable intuitive module placement with in-viewport snapping guides

Additional Projects: Fall 2025 Demo Reel, Spring 2025 Demo Reel, Complex Origami Showcase

Technical Skills

Languages: C++, Python, Java, HTML, CSS, JavaScript, C, C#, OCaml, VEX, HLSL, GLSL
Platforms and Tools: Matplotlib, Java Swing, Flutter, PyQt, Qt, WSL, Git, PyOpenGL, OpenGL, RenderDoc
Software: Houdini, Blender, Maya, Substance Painter, DaVinci Resolve, Photoshop, Figma, Unity, Unreal Engine