Kevin Wei

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EDUCATION

University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA *May 2028*

Candidate for Bachelor of Science in Engineering in Digital Media Design (GPA: 3.80)

Relevant Coursework: Discrete Math & Graph Theory; Automata Theory; Program Design; Algorithms & Data Structures; Computer Systems; Interactive Computer Graphics; Computational Linear Algebra; 3D Figure Modeling; 3D Animation

Activities: UPGRADE, Penn Spark, UPenn SIGGRAPH, Content Manager @ Penn Review

TECHNICAL SKILLS

Programming Languages: C#, C++, Java, Python, Lua, C, JavaScript, TypeScript, HTML, CSS, SQL, OCaml, HLSL, GLSL

Platforms/Tools: Unity Game Engine, Unreal Engine, Shader Graph, Blender, ZBrush, Maya, Da Vinci Resolve, After Effects, Aseprite, Audacity, SFXR, MuseScore, Wordpress, Figma, React, Tailwind, Django, Git

RELEVANT EXPERIENCE

Co-President | *UPenn Games Research and Development Environment (UPGRADE) Club* *May 2025 – Present*

- Led meetings and showcases, oversaw team logistics, engineered architecture for new game, UPGRADE Kart.
- Organized 24-hour Halloween Game Jam event and secured a sponsorship from Tripo AI.
- Produced workshops on game dev basics, level design, modeling, shaders, polishing, UI/UX, and more.
- Made dev tools, VFX, and movement code for Catanks, a club-wide top-down tanks game published on Steam.

Founder & President | *Maria Carrillo High School (MCHS) Game Dev Club* *September 2021 – June 2024*

- Founded new club to teach C#, Unity, game design, pixel art, and music production to my local community.
- Organized guest lecture by professional VFX artist from Hidden Leaf Games to educate about games industry.

PROJECTS

Raymarched Fluid Renderer | *C#, HLSL, Unity* *June 2025 – August 2025*

- Simulated Newtonian fluids using Smoothed Particle Hydrodynamics and Navier-Stokes equations.
- Optimized runtime with bitonic merge sort and 3D spatial hashing to support 50000+ particles.
- Real-time raymarching with physically based refraction/reflection and Fresnel calculations for realistic lighting.

Flocks of Fish | *C#, HLSL, Unity* *May 2025 – June 2025*

- Developed GPU-accelerated swarm AI using Boid principles (separation, alignment, cohesion).
- Implemented parallel processing within compute shaders for stable performance of 20000+ fish at 60 FPS.
- Created procedural fish, sharks and whales, caustics, and an interactive submarine to explore the ocean floor.

Flying Through Clouds | *C#, HLSL, Unity* *April 2025 – May 2025*

- Soar through volumetric clouds (incremental raymarching with forward scattering and light attenuation).
- Built custom GPU-based Worley Noise and fractal Brownian motion tool to rapidly generate 3D cloud textures.

A Bear Game | *C#, Shader Graph, VFX Graph, Unity, Blender* *December 2024 – April 2025*

- Play as a bear who takes pictures of nature, incl. islands, volcanos, birds, fish, cherry blossoms, and skyscrapers.
- Explore the open world, beaches, cities, forests; drive on roads, talk to people, catch fireflies, and buy donuts.
- Developed node-based dialogue system to enable easy, rapid production of complex NPC conversations.
- Designed Unity path creation tool with cubic Bézier splines and mesh snapping to simplify NPC navigation.
- Created stylized toon shading integrating Lambert, Blinn-Phong, and subsurface scattering calculations.

Descent | *C#, Unity, Team of 4* *August 2024 – November 2024*

- Collaborated in a cross-disciplinary team to prototype and ship a 3D snowboarding game.
- Endless procedural terrain generation, physics-based movement, mid-air tricks system, and sand/snow biomes.
- Composed original 6-minute game track on MuseScore with 2 cellos, piano, harp, acoustic bass, and drum set.