Hyuk Che Kwon

linkedin.com/in/hyukchekwon | lukekwon98.github.io

Education

University of Pennsylvania | Philadelphia, PA — Aug. 2025 - Present

Master of Science in Engineering, Computer Graphics and Game Technology

Sogang University | Seoul, South Korea — Mar. 2018 - Aug. 2024

Bachelor of Science in Engineering, Computer Science and Engineering — Major GPA: 3.92

Bachelor of Arts, Global Korean Studies — Magna Cum Laude

Projects

OpenGL Post-Process Renderer — Oct. 2025

- Implemented Blinn-Phong reflection, Matcap shading, Sobel filter, Gaussian blur, and polar spherical camera control.
- Built custom post-process effects using Worley and Perlin noise to warp scene UV coordinates.
- Wrote a vertex shader to interpolate model geometry between its original shape and a sphere.
- Developed a fragment shader that uses sine functions based on fragment UV coordinates to create a rippling color effect.

CPU Rasterizer — Sep. 2025

- Developed a 3D graphics engine in C++ featuring a custom perspective camera, rasterization, and Z-buffering for depth.
- Utilized perspective-correct barycentric interpolation for accurate color, texture mapping, and depth.
- Implemented Lambertian and Toon shading for lighting, and Bresenham's algorithm for a wireframe mode.
- Improved image quality using supersampling anti-aliasing.

Spline Curve Editor — Sep. 2025

- Implemented piece-wise Linear, Cubic Hermite, and Cubic Catmul-Rom splines using vec3 classes in C++.
- Evaluated cubic Bezier segments using Bernstein polynomials, De Casteljau's algorithm, and the matrix formulation.
- Built a 3D rotation system with conversion functions between Rotation Matrices, Euler Angles, Quaternions, and Axis/Angle representations.
- Implemented linear and cubic Euler angle and quaternion spline interpolation, including shortest path logic and Slerp.

Experience

ACM SIGGRAPH Student Volunteer — Aug. 2025, Dec. 2024

SIGGRAPH 2025 Vancouver, SIGGRAPH Asia 2024 Tokyo

- Facilitated operations for key venues, including Technical Papers, Courses, and Production Sessions.
- Engaged with industry researchers and studio professionals at exclusive technical sessions and meetups.

Undergraduate Research Assistant — Apr. 2024 - June 2024

Visual Computing Lab, Sogang University

- Presented weekly research on view synthesis papers including SIFT, NeRF, 3D Gaussian Splatting, and Scaffold-GS.

Teaching Assistant — Sep. 2023 - Dec. 2023

Introduction to Visual Media Programming, Sogang University

- Assisted in teaching topics such as homogeneous transformations, perspective projection, and edge detection algorithms.

Skills

Languages: C, C++, GLSL, Python, F#

Tools/Frameworks: OpenGL, GLM, Autodesk Maya, Unity, Blender, Visual Studio, QT Creator