

Rin Fukuoka

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EDUCATION

University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA May 2027
Bachelor of Science in Engineering in Digital Media Design (Computer Graphics) *GPA: 3.71/4.00*

Stuyvesant High School, New York, NY June 2023

Activities and Awards: National Museum of Mathematics Steven H. Strogatz Prize for Math Communication Winner, Stuyvesant Math Survey (Math and CS student publication) Editor-in-Chief, Stuyvesant/NYC Math Team Assistant Captain

Relevant Coursework: Procedural Computer Graphics, Computer Animation, Data Structures & Algorithms, Advanced Algorithms, Linear Algebra, 3D/Figure Modeling, Drawing Investigations

PROJECTS

Animation Toolkit...Link November 2024

- Built an interactive **C++** tool for **curve editing and body kinematics**. Curve editor features interpolation techniques including Cubic, Catmull-Rom, Hermite, Euler angles, and quaternion splines. Kinematics editor includes forward kinematics and inverse kinematics with limb-based or coordinate cyclic descent methods.

Ground-Up Minecraft...Link December 2024

- Developed a 3D voxel game engine using C++ and OpenGL in a three-person team. Honored in the Hall of Fame for exceptional project achievement.
- Implemented **shadow mapping** with Percentage Closer Filtering, **procedural terrain generation** and biome blending with various noise functions, texturing, and animation.

Mini Graphics Engine...Link January 2022

- Engineered a **procedural graphics pipeline** that implemented advanced techniques for line encoding, ambient and diffuse lighting models, dynamic shading algorithms, and keyframe animation.

Colored Conway's Game of Life...Link December 2023

- Designed a custom, **color-augmented cellular automaton algorithm** based on Conway's Game of Life in **Unity/C#**.
- Engineered advanced RGB color blending algorithm to create dynamic color evolution, integrating both deterministic logic and randomization.

Music Video for "Sleep Talk Metropolis"...Link January - April 2024

- Co-directed and led modeling in a team of four to create a 2-minute fan music video, blending traditional 2D art with stylized 3D animation, utilizing **custom toon shaders** for a unique visual aesthetic.

EXPERIENCE

UPenn Program in Algorithmic and Combinatorial Thinking | Teaching Assistant | Philadelphia, PA June - July 2024

- Guided more than **160+** students on advanced **algorithms and data structures**, including randomization algorithms, approximation algorithms, graph theory, probability/expectation, and proof techniques, and other core problem solving skills in computer science.
- Designed and printed 160+ original T-shirts that creatively incorporated Karger's Min-Cut Algorithm, blending mathematical concepts from the course with artistic design.

ACTIVITIES

SIGGRAPH UPenn Chapter | Treasurer | Philadelphia, PA Aug 2024 - Present

- Manage club finances, liaised with the Student Activity Council, and negotiated funding for the Game Developers Conference trip, events, and professional industry talks.
- Contribute to hosting and organizing weekly workshops focused on the 3D Graphics pipeline

Astronomical Student Association @ Penn | Designer | Philadelphia, PA Sept 2023 - May 2024

- Managed social media presence, designing and illustrating visually engaging posters and announcements.
- Collaborated in event planning and weekly telescope nights, enhancing outreach and participation of 20+ students.

SKILLS

Programming: C++, Java, Python, C#, GLSL, OpenGL, OCaml, Swift, HTML/CSS, JavaScript

Art/Graphics Tools: Houdini, Unity, ZBrush, Blender, Maya, Unreal, ClipStudio Paint, AfterEffects

Interests: Figure drawing, Origami math, Cel animation, T-shirt design, West Coast Swing Dance