CAROLINE LACHANSKI

clach@seas.upenn.edu
(908) 209-9098
carolinelachanski.com
https://vimeo.com/298670321

EDUCATION

University of Pennsylvania School of Engineering and Applied Science — Philadelphia, PA
MSE in Computer Graphics and Game Technology, **GPA:** 3.93/4.00 — *Dec 2019*
BSE in Digital Media Design, **GPA:** 3.76/4.00, **Minors** in Fine Arts, Mathematics — *May 2019*

Coursework: GPU Programming and Architecture (Fall 2019), Physically-Based Animation (Fall 2019), Interactive Computer Graphics, Computer Graphics Rendering, Computer Animation, Procedural Graphics, Game Design and Development, Data Structures and Algorithms, Linear Algebra, 3D Modeling, iOS Development

SKILLS

Languages: C++, GLSL/HLSL, C#, Java, Python, MEL, TypeScript, C, Swift

Software/API: Unity, OpenGL, WebGL, Vuforia, Git, Visual Studio, Qt, Blender, Maya API, Unreal, Photoshop, Illustrator

EXPERIENCE

Activision, Central Technology, Portland, ME — *May 2019 - Aug 2019*
Programming Intern, under Michael Vance (Technology Fellow)

- Helped integrate new subdivision surfaces system using adaptive quadtrees into *Call of Duty* renderer
- Ported tool for collecting shader performance statistics between different game engines
- Used GPU debugging/profiling tools to analyze engine and shader code and look for points of optimization

STRIVR, Menlo Park, CA — *May 2018 - Aug 2018*
Software Engineering Intern, under Rama Pagadala (Director of Engineering)

- Developed workplace communications training application for Oculus Rift and Go using Unity and C#
- Designed and documented new workflow for storing and accessing project assets with asset bundles
- Implemented 3 new shaders, improved UI/UX, and added new features such as a spherical video scene

University of Pennsylvania Price Lab for Digital Humanities, Philadelphia, PA — *Sept 2018 - Present*
3D Programming Intern

- Develop interactive VR/AR experiences for Oculus Rift, HoloLens, Android, and iOS for visualizing archaeological artifacts and locations using Unity, C#, and Vuforia
- Write step-by-step guides and help run workshops on Unity and VR/AR for Penn community

PROJECTS

Voxel Structures: *C++, OpenGL, Qt* — *Spring 2019*

- Implemented a voxel-based version of the wave function collapse algorithm to procedurally generate 3D structures given a set of voxel meshes and adjacency rules, including a build mode

Maya Plugins: *C++, Python, MEL, Maya API* — *Spring 2019*

- Developed custom Maya plugins, including a deformer node based on *Dijkstra-based Terrain Generation Using Advanced Weight Functions*, an L-system node, and a random points node, featuring MEL-based menus

Monte Carlo Path Tracer: *C++, Qt* — *Spring 2018*

- Implemented path tracer, using various integration methods including direct lighting and global illumination with multiple importance sampling, culminating in photon mapper using k-d tree
- Added features such as thin lens camera, implicit surfaces, various light sources (spot, point, and area light)

Procedural Graphics Projects: *TypeScript, WebGL* — *Spring 2018*

- Developed interactive, procedural projects, including an art-directable cactus l-system, a planet scene using 3D FBM, Perlin noise, and Worley noise, and a real-time sphere-traced scene using implicit surfaces

Mini Minecraft: *C++, OpenGL, Qt* — *Fall 2017*

- Three-person project; implemented procedural terrain with 2D FBM, block interaction with raymarching and ray-cube intersections, A* algorithm to determine movement of non-player character, distance fog, and multi threading in terrain generation

LEADERSHIP & INTERESTS

Leadership: Penn SIGGRAPH Board Secretary, Residential Advisor, Advancing Women in Engineering Student Advisory Board Member

Interests: Illustration, film, animation, gaming, fiction novels, women in STEM, K-pop music, embroidery, manga