

# CAROLINE LACHANSKI

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## 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 & INTERESTS

**Programming:** 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

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

## EXPERIENCE

**Activision**, Portland, ME May 2019 - Aug 2019

**Programming Intern**, Central Technology under Michael Vance (Technology Fellow)

**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# with 6-person team of developers and artists, employing Agile methodology and TFS
- Designed and documented new workflow for storing and accessing project assets with asset bundles
- Implemented 3 new shaders, improved UI/UX, and added 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

**Wave Function Collapse:** 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

**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 various interactive, procedural graphics-based projects, including an art-directable l-system cactus, procedural planet using 3D FBM, Perlin noise, and 3D Worley noise, a real-time ray-marched scene using signed distance functions, and an interactive particle system

**Mini Minecraft:** C++, OpenGL, Qt

Fall 2017

- Worked on 3-person team; implemented procedurally generated terrain with 2D fractal Brownian motion, raymarching and ray-cube intersections for interaction with environment, A\* algorithm to determine movement of non-player character, distance fog, and multithreading in terrain generation

## LEADERSHIP

**Penn SIGGRAPH Board**, Secretary

Spring 2017 - Present

- Plan professional workshops, social events, and mentoring program for CG community

**Residential Advisor**, Kings Court English College House, PiH, STWing

Fall 2017 - May 2019

**Advancing Women in Engineering Student Advisory Board**

Spring 2015 - May 2019