

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

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)

- Ported tool for collecting shader statistics during shader processing between different game engines
- Used GPU debugging and profiling tools to analyze shader code and stats 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 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

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 cactus l-system, procedural planet using 3D FBM, Perlin noise, and Worley noise, a real-time ray-marched scene using implicit surfaces, 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 & INTERESTS

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