

HANNAH BOLLAR

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SKILLS

C++ · JavaScript · OpenGL/OpenVR/WebGL · GLSL · Java · Python · CUDA · Vulkan · gpujs · Eigen · Maya · Unity · Unreal

EXPERIENCE

Pixar Animation Studios, Rendering Pipeline Software Engineer Spring '20 - present

- Responsible for maintenance and feature upgrades for the pipeline.

Unity Technologies, Engine Programmer Intern Summer '19

- Worked on the DOTS team, fixed unclear type-error messages, cleaned up Trunk, worked on porting general sample to ECS.
- Updated the Boids sample used as the main reference for the new Unity DOTS package. Removed unnecessary double buffering for the Update by use of DeallocateOnCompletion and added lengthy documentation for newer users.

NVIDIA, Computer Graphics Software Engineer Intern Summer '18

- Worked with OpenVR/OpenGL adding controller support to NvWebView sdk samples.
- Used Unreal Engine 4 to refactor NvWebView for Holodeck Engine and its hangouts feature in separate Holodeck application plugin.
- Liaison between AR/VR UX research / Browsers to implement requested NvWebView features (loc: Austin, Durham, Helsinki, Santa Clara, Toronto)

Cesium, Computer Graphics Software Engineer Intern Spring '18

- Modified JavaScript open-source globe rendering engine library: camera, particle effects, mini game.

University of Pennsylvania, Teaching Assistant Fall '15 - Fall '19

- 7 Classes with 18 total sessions over 9 semesters. TA'd at most 3 courses per semester. Selected to assist in training new TAs.

Undergraduate Level

EAS 205: Applications of Scientific Computation [1x]

CIS 110: Introduction to Programming [1x]

FNAR 264: Java Seminar (Head TA) [8x]

Graduate Level

CIS 565: GPU Programming and Architecture (Head TA) [1x]

CIS 563: Physically Based Animation [1x]

CIS 561: Advanced Rendering Techniques [2x]

CIS 560: Intro to Computer Graphics (Head TA) [4x]

EDUCATION

University of Pennsylvania Philadelphia, PA

MSE in *Computer Graphics and Game Technology* Fall '19

BSE in *Computer Science: Digital Media Design* Spring '19

Minor in *Mathematics*, SIGGRAPH Chairman and Mentor, Freshman Peer Advisor, TA trainer

PROJECTS

Game Engine: C++, OpenGL, glfw Fall '18 - Spring '19

- A generalizing game engine with a small cat-searching controller-based desktop game built off it.

Odin BioCrowds: JavaScript, WebGL2, gpujs Fall '18

- Group project implementing BioCrowds using a gpujs pipeline with a WebGL2 visualization.
- Responsibilities: initial WebGL2 pipeline, entire backend gpujs pipeline, render pass manipulations for BioCrowds algorithm.

Monte Carlo Path Tracer: C++, CUDA

- CUDA optimized: probabilistic BSDFs, anti-aliasing, bonne projection bokeh mapping, motion blur, depth of field, stream compaction, contiguous material memory, and first bounce caching. Fall '18
- C++ generalized: Full Lighting, BVH acceleration structure, multiple importance sampling, global illumination, depth of field, different light-source types, and photon mapping. Spring '17

Snow and Jello using the Material Point Method: C++, Eigen Fall '17

- Group project implementing MPM on APIC grid system.
- Responsibilities: Implementation of particle and grid transfers, stress and force update calculations, other math help.

AWARDS AND ACCOMPLISHMENTS

Penn Engineering Exceptional Service Award

Member of Eta Kappa Nu Honor Society (IEEE-HKN)

Interviewed for Professional SIGGRAPH Member Profile

ACM/UPE Scholarship Award 2019 (1 of 4 national winners)

Dawn & Welton Becket Digital Media Design Achievement Award

ACM-W Scholarship to attend SIGGRAPH 2018 Conference

As Chairman, led Penn SIGGRAPH to win 2019 Chapter Excellence Award

Helped found both the WIA and UPE chapters at Penn