



# AUSTIN ENG

## SOFTWARE & GRAPHICS ENGINEER

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### EDUCATION

**UNIVERSITY OF PENNSYLVANIA** · AUGUST 2014 - MAY 2018  
**B.S.E COMPUTER SCIENCE · M.S.E. COMPUTER GRAPHICS AND GAME TECHNOLOGY**

### EXPERIENCE

**UNIVERSITY OF PENNSYLVANIA** · AUGUST 2015 - NOW  
**COMPUTER GRAPHICS TA** · C++ · OPENGL · GLSL

**DREAMWORKS ANIMATION** · JUNE - AUGUST 2016  
**DEPARTMENT TECHNICAL DIRECTOR** · PYTHON

- Developed tools and plugins to improve workflow for the lighting department with PyQt.
- Optimized execution of render submissions and improved error reporting and logging of jobs.
- Designed and built more flexible and powerful tools for comparing arbitrary projects.

**WALT DISNEY ANIMATION STUDIOS** · JUNE - AUGUST 2015  
**ART AND PRODUCTION INTERN** · PYTHON · HOUDINI · MAYA

- Learned the entire animation pipeline through the production of a short film.
- Specialized in procedural modeling, effects, and technical animation in Houdini.
- Assisted in writing scripts to solve pipeline problems with animation and rig transfer.

**ARTSICLE** · JANUARY 2014 - MAY 2014

**FULL STACK WEB DEVELOPER** · RUBY · JAVASCRIPT · CSS · HTML

- Developed MVC architecture for new features to assist artists in promoting their work
- Improved caching efficiency with modifications to the Cashier gem
- Rewrote portions of the test suite to minimize external API calls for speed improvements and protection of credentials

### PROJECTS

**BOIDS** · SEPTEMBER 2016

**GPU FLOCKING SIMULATION** · CUDA · C++

- Crowd simulation algorithm which executes almost entirely in CUDA kernels and easily handles half a million agents at over 60fps

**FLIP/PIC FLUID SOLVER** · APRIL 2016

**PHYSICALLY-BASED FLUID SOLVER** · C++ · OPENGL

- Highly concurrent and scalable fluid solver built for class implementing the FLIP/PIC fluid simulation method
- Capable of simulating over one million fluid particles

**BIOCROWDS** · MARCH 2016

**CROWD SIMULATION ENGINE** · JAVASCRIPT · WEBGL

- Realtime, 60fps, crowd simulation engine which computes on-the-fly, collision-free trajectories for hundreds of agents in a web browser
- Optimized by formulating computations as constant-time shaders executing over a uniform grid

**MONTE CARLO PATHTRACER** · DECEMBER 2015

**PHYSICALLY-BASED RENDERER** · C++ · OPENGL

- Highly concurrent Monte Carlo pathtracer built for class from scratch.
- Supports BVH spatial acceleration, multiple importance sampling, progressive rendering, sobol sampling

**MINI-MAYA** · APRIL 2015

**3D MODELING PROGRAM** · C++ · OPENGL

- 3D Modeling program built for class as an introduction to fundamental computer graphics principles
- Supports mesh data structures, subdivision, dual quaternion skinning, spatial acceleration, GPU-accelerated selection

### SKILLS

**C++ · PYTHON · JAVASCRIPT · OPENGL · WEBGL · UNIX · HOUDINI**