# Jacob E. Snipes

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## Education

**University of Pennsylvania School of Engineering and Applied Science** — *Philadelphia, PA*

Master of Science in Engineering, Computer Graphics & Game Technology, 3.67 / 4.00 overall — *Exp. May 2019*

- **Relevant Coursework:** Interactive Computer Graphics, Physically-Based Animation, Computer Animation, Game Design Practicum, 3D Computer Modeling & Sculpture

**University of Pennsylvania School of Engineering and Applied Science** — *Philadelphia, PA*

Bachelor of Science in Engineering, Mechanical Engineering & Applied Mechanics, *Magna Cum Laude*, 3.70 / 4.00 overall — *May 2018*

- **Minor:** Computer Science
- **Honors & Awards:** Dean's List 2015 - 2016, 2016 - 2017, 2017 - 2018; 2018 John Couloucoundis Prize
- **Relevant Coursework:** Advanced Dynamics, Fluid Mechanics, Solid Mechanics, Mechanics of Materials, Heat & Mass Transfer, Thermodynamics, Data Structures & Algorithms

## Skills

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|---|---|
| **Software** | Unity, Unreal, OpenGL, WebGL, Houdini, Maya, SolidWorks, AutoCAD, CLion, Qt, Git, MATLAB, Excel |
| **Programming Languages** | C++, GLSL, JavaScript, C#, Java, OCaml |
| **Foreign Languages** | French (Fluent), Japanese (Basic) |

## Experience

**University of Pennsylvania SIG Center for Computer Graphics** — *Philadelphia, PA*

Research Intern: Physically-Based Animation — *May 2018 - Aug. 2018*

- Wrote physically-based wind simulator under Dr. Chenfanfu Jiang to interface with Unity VR data visualization project
- Built in C++ and rendered with Houdini
- Features: Species concentration advection, mass diffusion, reverse-time solver, travel time I/O

**Slothparadise** — *Remote*

AR Developer — *Aug. 2017 - Dec. 2017*

- Used Unity and C# to support Duel Monsters GO AR project for Microsoft HoloLens
- Created JSON card database, allowing game to automatically check card stats (type, attribute, level, etc.) via C# scripting
- Added support for ydk files using C#, allowing players to easily create custom decks

**University of Pennsylvania** — *Philadelphia, PA*

3D Animator — *May 2017 - Aug. 2017*

- Animated various real-world problems for use as teaching tools in Statics and Strength of Materials (MEAM 210) using Maya and SolidWorks
- Created videos in iMovie detailing 3D analysis of class's most difficult concepts using animation as a means of visualization
- Narrated videos, explaining the concepts to hundreds of students seeing them for the first time

## Projects

**LifeWatch**

The first wearable auto-injector (Patent Pending) — *Sept. 2017 - Present*

- Collaborated in team of six to design, test, and manufacture wearable auto-injector in watch-shaped profile
- Served as project manager, overseeing all areas of development: design, timeline, budget, external funding
- Edited all team-written documents for brevity, voice, and clarity
- Winner of First Prize at University of Pennsylvania's 2018 SEAS Senior Design Competition and 2018 M&T Summit
- Winner of Third Prize at 2018 BMEidea competition

**Smoke & Renders**

Physically-based smoke simulator — *May 2018*

- Built in C++ and rendered with Houdini
- Features: Velocity/density/temperature advection, vorticity confinement, pressure projection

**Organic FEMistry**

Physically-based deformable solid simulator using the Finite Element Method — *Mar. 2018*

- Built in C++ and rendered with Houdini in team of four
- Notable features: Mesh tetrahedralization using TetGen, Neo-Hookean elasticity model, rigid-body collision detection, holonomic constraints
- Contributions: Hand calculations using Lagrange's equations, constraint implementation, collision handling, debugging, rendering