

# Jacob E. Snipes

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## Education

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### 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)

## Experience

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### University of Pennsylvania SIG Center for Computer Graphics

Philadelphia, PA

RESEARCH INTERN: PHYSICALLY-BASED ANIMATION

May 2018 - Aug. 2018

- Wrote physically-based wind simulator in C# under Dr. Chenfanfu Jiang to interface with Rowan University VR data visualization project

### Slothparadise

Remote

AR DEVELOPER

Aug. 2017 - Dec. 2017

- Used Unity and C# for 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
- Adapted character models from earlier video games and added standby animations

### 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

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### 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
- Winner of First Prize at University of Pennsylvania's 2018 SEAS Senior Design Competition
- Winner of First Prize at University of Pennsylvania's inaugural M&T Summit
- Recipient of 2018 Berkman Fund for Undergraduate Innovation

### Smoke and Renders

PHYSICALLY-BASED SMOKE SIMULATOR

May 2018

- Written 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

- Written in C++ and rendered with Houdini in a 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