Joseph Gao

Software Engineer

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Education

2016–2018	**University of Pennsylvania**, *M.S.E in Computer Graphics*, Philadelphia, PA.
2014–2018	**University of Pennsylvania**, *B.S.E in Computer Science*, Philadelphia, PA.

- Master's GPA: 4.0, Bachelor's GPA: 3.6
- Expected Graduation: May 2018

Experience

2016-Present — Research Assistant, *SIG Center for Computer Graphics at Penn*, Philadelphia, PA.
Crowd simulation and agent behavior modeling.

- Developed an ambient noise generation algorithm that realistically reproduces a sound environment when given a short audio sample. The algorithm is based off of a SIGGRAPH paper titled *Video Textures* by Schödl et al.
- Implemented a stochastic agent distribution system for a virtual market environment which led to a 10% increase in agent-to-agent interactions during agent activity transitions, resulting in a realistic crowd flow.
- Built the UI for a proprietary graphics testing environment in Unity, allowing researchers to alter a running test's parameters and have the environment dynamically respond without having to restart the test.

2015-Present — Software Engineer, *Penn Labs*, Philadelphia, PA.
Lead Developer and Project Manager.

- Lead developer for PennVolvement. Laid out the low-level specifications and led the backend development effort.
- Developed a recommendations module based off of Google's video adsorption algorithm for PennVolvement.

2016-Present — Teaching Assistant, *Computer Science Department at Penn*, Philadelphia, PA.

- CIS 121 - Data Structures and Algorithms.
- CIS 196 - Ruby on Rails Web Development.
- Developed course content with Java and Ruby, implemented grading tools with Capybara and RSpec.

2016-2016 — iOS Engineering Intern, *Vea Fitness*, Philadelphia, PA.

- Increased user retention rate from 10% to 20% by implementing a streamlined user signup and login experience.
- Rewrote several core features in Swift by updating the UI and replacing deprecated components.

2015-2015 — Software Engineering Intern, *3Top Inc.*, New York, NY.

- Refactored and expanded 3Top's API with Django's REST Framework to provide user data in JSON.
- Integrated Safe Browsing API into an existing security module to flag links that contained malicious content.

Projects and Awards

2016 — Surgery.io, *Django and JavaScript*

- Enables surgeons to quickly check the compatibility between specific medical devices during a surgical operation.
- Approved for use by the Hospital at the University of Pennsylvania.

2016 — Watchman, *Rails and Swift*

- Apple Watch app that detects when a law enforcement agent fires a weapon. The app will proceed to warn civilians within a one-mile radius to take shelter if a shot was detected.
- App also tracks the agent's heart rate in BPM and validates the data with the accelerometer to prevent false alarms.

2015 — TextFeed, *Python and Twilio*

- Flask application that provides local crime alerts to users without an internet connection via SMS.
- Won Best Public Safety Hack and Best Use of Comcast Everyblock API at PennApps Winter 2015.

2015 — WikiLearn, *Python*

- Visualization tool that ranks Wikipedia pages related to a central topic for educational purposes.
- Selected as a Top 16 Finalist at HackPrinceton Spring 2015.

2015 — PennVolvement, *Rails and JavaScript*

- App that connects students to local Philadelphia organizations in need of volunteers.
- Approved by Penn and has been recognized as the official student volunteer service board by the Penn UA.

Relevant Skills

Technologies	Java, Ruby, Python, JavaScript, C, C++, C#, Swift, Hadoop, HTML, CSS, Rails, Django, Meteor.
Classes	Data Structures and Algorithms, Computer Graphics, Operating Systems, Computer Architecture.