

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 PennVolvment. 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 PennVolvment.
- 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 **PennVolvment**, *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 Software Engineering and Design, Cloud Computing, Computer Graphics, Operating Systems, Computer Architecture.