

HOWARD HWANG

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Portfolio: twpride.github.io • GitHub: [twpride](https://github.com/twpride) • LinkedIn: [howard-hwang](https://www.linkedin.com/in/howard-hwang)

SKILLS

C++, Three.js, WebAssembly, WebGL, React, Redux, JavaScript / TypeScript, Node.js, HTML5, CSS3, SASS, Python, Django, Ruby on Rails, PostgreSQL, Webpack, jQuery, Git, Heroku, AWS (S3, Lambda), React Native, Next.js

PROJECTS

Three.cad • [Live](#) • [GitHub](#)

- A computer-aided design (CAD) web app built using Three.js, WebAssembly, and React.
- Features parametric sketching with [constraints](#) and 3D modelling with [constructive solid geometry](#) typically found in professional CAD programs.
- Users can use this program to design parts and export them for 3D printing.

Music Player One • [Live](#) • [GitHub](#)

- A music player built with React and Django.
- Implemented full CRUD functionality of songs, tracks, and playlists using Redux (client-side) and PostgreSQL/Django ORM (server-side).

179 Tangrams • [Live](#) • [GitHub](#)

- A classic Chinese puzzle game built using HTML5 Canvas
 - Implemented algorithms to check for puzzle solve state, and collision between game tiles
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WORK EXPERIENCE

Software Developer • Spline, Inc. • Remote • May 2021 – Present

- Frontend development for a 3D design software for the browser
- Developed new modeling features including boolean modifiers and an edge slide operator (C++ WebAssembly)
- Led the integration of a desktop class modeling and sculpting tools with multi-user collaboration (Javascript / React)
- Implemented new features for camera controls, transform gizmo, and other user facing elements.

Systems Engineer • D & K Engineering • San Diego, CA • March 2018 – December 2019

- Developed a simulation/testing suite for characterizing the microfluidic system of a DNA sequencer. ([more info](#))
 - The simulation involved a python script that parsed machine protocols and generated a visualization of the expected system state after each command.
 - For testing, a program responsible for experiment execution (parsing protocol, sending commands) and data acquisition (video and pressure trace) was built using the wxPython GUI toolkit. This Python based system saved the company from having to hire a contract LabView developer and paying for a license.
- Implemented dashboard which allowed for synced sided-by-side comparison of experimental footage along with the visualization generated by the simulation.
- This tool, in addition to streamlining verification and troubleshooting efforts, enabled machine protocol optimizations which resulted in reduced reagent consumption and shortened runtimes.

Mechanical Engineer II • Organovo Holdings • San Diego, CA • April 2016 – October 2017

- Developed a dispense module from which two different materials can be extruded simultaneously or in rapid succession. This facilitated the bioprinting of organoids with a polarized geometry, fulfilling a key requirement in the hair follicle project.
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EDUCATION

App Academy • San Francisco, CA • February 2020 – June 2020

Immersive software development course with a focus on full stack web development

Cornell University • Ithaca, New York

Master of Engineering in Mechanical Engineering • GPA: 3.56 • May 2014

Bachelor of Science in Mechanical Engineering • GPA: 3.68 • May 2013