

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

React, Redux, JavaScript, Node.js, HTML5, CSS3, SASS, Python, Django, Ruby on Rails, PostgreSQL, Webpack, jQuery, Git, Heroku, AWS (S3, Lambda), React Native, Next.js, Three.js, GIMP, Inkscape

PROJECTS

Music Player One • A music player built with React and Django • [Live](#) • [GitHub](#)

- Managed song and playlist CRUD using Redux (client-side) and PostgreSQL/Django ORM (server-side). Features include drag and drop reordering of playlist tracks and editable song metadata.
- Automated album art fetching using API from [MusicBrainz](#) and [Cover Art Archive](#)
- Utilized AWS Lambda to directly fetch audio files from source URL to S3 storage.
- Leveraged Web Audio and Canvas API to generate live sound spectrogram of music during playback.

179 Tangrams • A classic Chinese puzzle game built using HTML5 Canvas • [Live](#) • [GitHub](#)

- Implemented algorithms to check for puzzle solve state, and collision between game tiles.
 - Built a custom carousel slider with puzzle preview on hover and integrated heatmap for tracking the player's progress.
 - Utilized OpenCv to digitize 179 problems from page scans of a puzzle [booklet](#).
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WORK EXPERIENCE

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 side-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.

Mechanical Engineer I • General Dynamics OTS • Healdsburg, CA • June 2015 – February 2016

- Designed test fixturing, developed and executed test plans for the Design Verification Test (DVT) of an electro-explosively actuated missile fin locking mechanism.
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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