Justin Shieh

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SKILLS

JavaScript, Ruby, Rails, React, Redux, Express, MongoDB, PostgreSQL, Node, Java, C++, C

PROJECTS

Dimension | *(React/Redux, Rails, PostgreSQL, ActionCable/Websockets, AWS, Heroku)* **live** | **github**

A single-page Discord clone where users can add friends, upload profile photos and create Servers/Channels to send messages and video chat.

- Leveraged Rails' Action Cable and Redis to manage web-socket connections for live-chat.
- Optimized database search speed by removing N+1 queries by strapping all necessary data for servers in a simple SQL query through ActiveRecords.
- Incorporated WebRTC to host live video and voice chat through a cloud STUN server by establishing a direct peer-to-peer connection, eliminating the need to install additional plugins or download native apps.

Delicieux | *(MongoDB, Node.js, Express, Webpack)* **live** | **github**

A dynamically updating grocery management and meal planning application with smart recipe suggestions based on stored ingredients, filter parameters and diet goals.

- Managed team of four developers by assigning tasks, setting design review meetings, and ensuring team members' understanding of requirements and proposed design.
- Reduced number of API hits by 50% by selectively caching commonly used information to the database in order to sharply improve website responsiveness and decrease bottlenecks.
- Ensured user privacy and autonomy through frontend and backend authentication measures and Express routing, allowing users to only access activities list when logged in.

Amaurosis | *(JavaScript, HTML5, CSS)* **live** | **github**

A minimalist birds-eye view sensory-deprivation experience that challenges players to solve complex puzzles without the traditional use of sight.

- Established a unidirectional data flow architecture with a single application-level state object to prevent mutated state and data collision, and to ensure reliable DOM rendering.
- Built a custom physics engine that supports collision of multiple objects at once and manages player and AI movement patterns as well as vector changes due to objects reflecting off walls or passing through portals.
- Decreased graphic rendering lag by implementing a "camera" that follows the player's movement and reveals only a limited portion of the game map, allowing the game to render only what the player can see.

EXPERIENCE

Undergraduate Research Assistant

University of California, San Diego Soft-tissue Biomechanics Laboratory Sep 2017 - Jun 2019

- Characterized the time course and magnitude of pulmonary vasculature and the relation to cardiac function and published findings to ASME Journal of Biomedical Engineering.
- Developed MATLAB program for data alignment from multiple sources and algorithmic signal smoothing.
- Optimized laboratory workflow by automating data collection and data management by creating a spreadsheet parsing software with MATLAB.

Undergraduate Research Assistant

University of California, San Diego Cardiology and Bioengineering Laboratory Mar 2018 - Jun 2019

- Designed wireless bed sensor system using Piezoelectric sensors and load cells for outpatient chronic disease management to improve timeliness of necessary hospitalizations.
- Enhanced accuracy of readings and reduced error through adaptive noise cancellation by applying the least mean square algorithm to filter out ambient noise.
- Constructed custom load cells using Raspberry Pi, strain gauges and injection molding to reduce production costs.

EDUCATION

University of California, San Diego - *Biomedical Engineering, GPA: 3.7, 2015-2019*

App Academy - Software Engineering Bootcamp, 2019