Justin Shieh

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SKILLS

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

PROJECTS

Dimension | *(React/Redux, Rails, PostgreSQL, ActionCable/WebSockets, AWS S3, WebRTC, 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.

- Optimized database search speed and reduced server load by removing N+1 queries through utilization of ActiveRecord's associations and the .includes method to extract data from multiple tables in a single query.
- Leveraged React Router and a custom URL parsing algorithm to allow users to join servers through the address bar using an encrypted server URL, providing a seamless user experience while also minimizing privacy risks.
- Incorporated Rail's ActionCable and Redis to manage WebSocket connections for live-chat and displaying online status in real-time.

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.

- Harnessed Redux single-state management to streamline communication between backend and frontend architecture to facilitate CRUD functionality, letting users update their meal plan and ingredients accurately.
- Reduced number of REST API hits by 50% by selectively caching commonly used information to the database in order to sharply improve website responsiveness and decrease bottlenecks.
- Managed team of four developers by assigning tasks, setting design review meetings, and ensuring team members' understanding of requirements and proposed design.

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, reducing the chance of errors and improving debuggability of the code.
- Built a custom physics engine using JavaScript to support collision of multiple objects, manage player and AI movement patterns, and calculate vector changes due to objects reflecting off walls or passing through portals.
- Decreased graphic rendering lag by implementing a "camera" via html5 Canvas's image translation that follows the player's movement and reveals only a portion of the map, limiting the number of objects the game needs to render.

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