Vincent Tsui

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SKILLS

Ruby on Rails, Ruby, JavaScript, React-Redux.js, SQL, Java, jQuery, C++, Python, MongoDB, Express, Node.js, Git, HTML5, CSS3, MATLAB, C, SystemVerilog

EDUCATION

University of California, San Diego - *BS - Mathematics-Computer Science; Electrical Engineering*; Provost Honors (Jun 2019)
App Academy - Immersive software development course with focus on full stack web development (Apr 2020)

EXPERIENCE

Software Engineer Intern Company Site
Healthware Inc., Jul 2018 - Dec 2018

- Developed 3 pharmacokinetic drug monitoring data visualization dashboards for prediction of health metrics such as drug toxicology using QCustomPlot.
- Improved the extensibility and modularity of data display features by refactoring existing codebase with Object Oriented Design.
- Collaborated alongside a team of software engineers and pharmacists to build accurate prediction models using various drug and patient health factors and pharmacology formulas.
- Applied Qt's TCP module to build a reliable pipeline of data from client-side local servers to a centralized online server and implemented synchronized, nonintrusive data migration from local SQLite database to AWS hosted SQL database through Apache server for future use and data processing.

PROJECTS

TrippyAide (React / Redux, Ruby on Rails, PostgreSQL) Live Site | Github
A travel site inspired by Tripadvisor

- Integrated and extended Google Maps API for geolocation based searching of various attractions and displaying custom marker information windows.
- Designed the map to dynamically update markers in view after every movement that changes the map's bounds..
- Employed redux's state manipulation for faster search and filtering without continuously hitting the database.
- Utilized SQL aggregates to calculate and sort attractions by average rating and create a recommendation system.
- Stored image uploads in the cloud using AWS S3, reducing server load for scalability.

Binding of Jsaac (MongoDB, Express, React/Redux, Node) Live Site | Github
A multiplayer rogue-like game inspired by Binding of Isaac

- Leveraged MongoDB's change streams along with Socket.IO to create a synchronized multiplayer lobby and gaming experience.
- Optimized the latency between server and client real-time feedback by minimizing data transfer between players and moving game logic onto the client-side.
- Manipulated React-Konva to animate realistic player and monster sprite attack patterns and movements.
- Generated random dungeons and modularized the generation of dungeon elements by taking advantage of MongoDB subdocument schemas.
- Designed monsters to smoothly follow the closest player by updating its own position via the players' XY coordinates.

River Flow (Three.js) Live Site | Github
A relaxing endless runner game

- Utilized continuous terrain update and rerendering to create a scene of infinitely-extending terrain without needing to initialize too many points to help GPU performance.
- Created random terrain by using simplex noise along with height and normal vector mapping.
- Optimized camera movement to follow along and rotate based on curvature of the river to simulate a relaxing experience.
- Controlled game and animation speed with requestAnimationFrame and FPS throttling.

Free and For Sale (AngularJS, Firebase) Live Site | Github
A second hand marketplace for UCSD Students

- Integrated Amazon's Product Advertising API to implement a price comparison functionality.
- Tracked price trends over time using Firebase backend to keep track of price trends over time for similar items.