

# DAVID TAN

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**SKILLS:** React, Redux, JavaScript, Ruby, Rails, PostgreSQL, SQL, SQLite3, Mongoose, MongoDB, Express.js, Node.js, AWS, WebSocket, Google Maps API, jQuery, HTML, CSS, Webpack, Git, Render

## PROJECTS:

**Davescord** *React, Redux, Ruby on Rails, JavaScript, PostgreSQL, AWS, WebSocket* [live](#) | [github](#)  
*A chat application inspired by Discord*

- Built a custom RESTful API using a Rails backend communicating with a PostgreSQL database via ActiveRecord queries
- Implemented a responsive and intuitive user experience which closely mimics the behavior of Discord's web application
- Incorporated WebSocket for real-time messaging between users subscribed to the same server as well as AWS so users and servers can have their own custom appearances

**Itinerate** *MongoDB, Express, React, Node.js, JavaScript (ES6), HTML5, CSS3* [live](#) | [github](#)  
*A single page web application where users can build an itinerary of activities within close proximity of each other*

- Securely stored hashed user information in the MongoDB database using the BCrypt library
- Employed Redux to manage front end state changes in conjunction with React components to keep code DRY and to prevent unnecessary rerenders while users navigate the app
- Integrated Google Maps API to allow users to explore activity options on an interactive map
- Collaborated in a team of 3 using Git version control to work on a single shared codebase

**Relentless Clash** *JavaScript, Canvas API, Keyboard API, and GamePad API* [live](#) | [github](#)  
*A 2-player fighting game written in vanilla JavaScript*

- Created a custom physics engine with collision detection between players, gravity, friction on the ground, and knockback when players are hit or when their swords collide
- Ensured minimal DOM manipulation between renders so users have responsive controls and an optimized user experience
- Leveraged Duck Typing to create a computer controller that simulates human player key presses, allowing the 2-player fighting game to run as a single player game against an AI

## EXPERIENCE:

**Graduate Research Assistant** *Aug 2014 - Dec 2019*

- Conducted novel research in nonlinear electromechanical systems resulting in 9 published journal articles and 12 conference proceedings
- Mentored 5 undergraduate students through piezoelectric actuation, structural vibration, and vibrational energy harvesting experiments

## EDUCATION:

**Georgia Institute of Technology**, Atlanta, GA *Dec 2019*  
Ph.D. in Mechanical Engineering (all but dissertation), 4.00 GPA  
*Presidential Fellowship, GWW End of Ph.D. Studies Fellowship*

**The Cooper Union for the Advancement of Science and Art**, New York, NY *May 2014*  
B.E. in Mechanical Engineering, 3.64 GPA  
*Full Tuition Scholarship*