LUKE ESPINA

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PROJECTS

BassCase – React.js | Redux.js | Ruby on Rails | AWS S3 live: bass-case.herokuapp.com
Full stack social music app inspired by SoundCloud

- Executes lazy loading of database information using React Lifecycle methods, normalized Redux state, and custom backend API endpoints for database scale
- Fulfills a sleek, attractive, responsive design featuring animated modals, collapsible widgets and menus, hover-over previews using local React state, JavaScript and CSS3
- Leverages Amazon S3 storage and Paperclip library to offer scalable file uploads

Sublime.js – JavaScript | HTML5 Canvas live: lukeespina.com/sublime
Performant canvas-based physics engine

- Incorporates OOP to simulate multiple object collision, rotation and forces
- Optimizes runtime performance by 40% by implementing smart, grid-based, collision-checking algorithm, allowing engine to render hundreds of interacting bodies efficiently
- Applies CSS3 transformations and breakpoints to achieve responsive design

Ruby on Trails – Ruby | SQLite3 | AWS EC2 proof of concept: 52.70.147.99/
Lightweight implementation of an MVC framework

- Utilizes the SQLite3 ruby gem and metaprogramming to build an Object Relational Mapper allowing for Object-Oriented, model-based database manipulation
- Integrates Rack Library to implement HTTP Routing, Controllers, and Server hosting
- Delivers fully-fledged Rails-like MVC framework with ability to create full stack apps

SKILLS

JavaScript, Ruby on Rails, Python, jQuery, React, Redux, RSpec, SQL, Git, HTML5, CSS3, AWS

EXPERIENCE

Experimental Fluid Mechanics and Aerodynamics Lab, New York June 2014 – June 2016
Research Assistant

- Researched wind speed configurations for piezoelectric energy harvesters using oscilloscope and 4’ x 4’ wind tunnel, resulting in 15% increased power output.
- Completed research thesis on vortex formation behind cylinders located in a flow field to showcase two-year culmination of findings to the department

NASA Armstrong Flight Research Center, California June 2015 – Aug. 2015
NASA Student Airborne Research Program

- Applied machine learning algorithm (unsupervised classification) using ENVI/IDL geospatial software to study effects of 2015 Refugio Beach Oil Spill by analyzing oil movement and kelp health through ~100 gigabytes of remote-sensing data
- Created a 3’ x 4’ poster summarizing research findings and presented results at Annual Biomedical Research Conference for Minority Students.

EDUCATION

App Academy, New York City Nov. 2018 – Feb. 2018

- 1000-hour software development course
- Teaches full-stack web development: JavaScript, React, Ruby, Rails, RSpec, TDD, SQL, algorithms, design patterns, and best practices

Macaulay Honors College at City College of New York, CUNY June 2016
B.S. in Physics, *magna cum laude*, GPA: 3.5

- Awards: NIH-funded MARC U*STAR Scholarship ’14 - ‘16, Ward Medal of Physics ’16
- Data Structures, Discrete Math, Differential Equations, Multivariable Calculus, Linear Algebra, Statistical Mechanics, Quantum Physics