Zachary Espiritu

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Education

Brown University
Sc.B. Computer Science
GPA: 4.0 · Graduating December 2021

Regis High School · June 2017

Skills

Languages

Ruby · C · C++ · JavaScript · HTML / CSS · Pyret · Racket · Python · SQL · Swift · Go · GLSL · MATLAB · Bash · Assembly

Technologies

Rails · React · Sass · jQuery · Heroku · Firebase · PostgreSQL · OpenGL · LaTeX

Formal Methods

Alloy Analyzer · TLA+ · Z3 · IBM CPLEX Optimization Studio

Prototyping and Design

Sketch · Figma · InDesign · Photoshop · Adobe XD

Coursework

Computer Systems Security
Design and Analysis of Algorithms
Discrete Structures and Probability
Introduction to Computer Systems
Introduction to Computer Graphics
Logic for Systems (Formal Methods)
Operating Systems
Prescriptive Analytics
Programming Languages
User Interfaces and User Experience

Interests

Theatrical Lighting Design
Rhythm Games
Print Layout Design

Experience

Brown Computer Science Department Spring 2019 — Present
SPOC (Systems Programmer, Operator, and Consultant)

- Off-hours, on-call technical staff; assists in the installation, maintenance, and development of department computer systems.

Brown PLT (Programming Languages Team) Summer 2018
Undergraduate Researcher

- Ported TensorFlow.js to Pyret to allow for Pyret programs with machine learning.
- Implemented a Pyret kernel for the Jupyter messaging protocol in JavaScript, allowing for the creation of Pyret "notebooks" and a command-line Pyret REPL.

Negotiatus Summer 2016 and Summer 2017
Software Engineering Intern

- Built several tools and interfaces in Ruby on Rails designed to automate and streamline Operations team workflows and improve overall company efficiency.
- Worked with 3rd-parties to create vendor-integrated order management systems.
- Designed, developed, and launched several client-facing features including the *Scheduled Orders* system and *Notifications Center* panel.

Teaching

(denotes Head Teaching Assistant)*

CSCI 1660: Computer Systems Security (*) Spring 2019
Applied introduction to security. Hired, trained, and coordinated staff of 8 TAs. Ported technical projects in Bash, PHP, JavaScript, and Golang to Google Compute Engine.

CSCI 0190: Accelerated Intro to Computer Science (*) Fall 2018
Functional programming, data structures, and algorithms in Racket and Pyret. Hired, trained, and coordinated staff of 9 undergraduate TAs. Developed new assignments and labs. Remotely organized summer placement exam and grading for 174 students.

Projects

(more at zacharyespiritu.com)

Weenix, *"Operating Systems" Semester Project*
A full operating system kernel, based on Unix. Built as a semester-long project.

Snowy Sunrise, *"Introduction to Computer Graphics" Final Project*
Two-person project in C++ and GLSL; a real-time GPU raymarched scene featuring L-systems, screen-space volumetric lighting, and fast-approximate anti-aliasing.

Vehicle Logistics Local Search, *"Prescriptive Analytics" Final Project*
Automated system for solving NP-hard vehicle routing problems with storage capacity and maximum distance constraints. Best performance out of 21 teams.

Math Battle!
Real-time, multiplayer, educational math experience on iOS with 4000+ downloads. Named on "10Under20: Young Innovators to Watch" at CEWeek 2016 for this work.