Zachary Espiritu

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in zacharyespiritu

Education

Brown University

Sc.B. Computer Science

GPA: 4.0 · Graduating December 2021

Skills

Languages

Ruby · C · C++ · JavaScript ·
HTML / CSS · Pyret · Racket ·
Python · Bash · Go · MATLAB

Technologies

Rails · 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

Experience

Brown Computer Science Department   Spring 2019

SPOC (Systems Programmer, Operator, and Consultant)

- On-call technical staff. Provides support and maintenance for Linux systems in the department used by students, teaching assistants, and faculty.

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.
- Optimized PostgreSQL queries for up to ~500x faster product catalog searches.
- 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

Hired, trained, and coordinated staff of 8 TAs. Ported technical projects in Bash, PHP, JavaScript, and Golang to Google Compute Engine. Automated setup process for each project using the Compute Engine API, reducing setup times by up to ~92%.

CSCI 0190: Accelerated Intro to Computer Science (*)   Fall 2018

Functional programming, data structures, and algorithms in Racket and Pyret. Hired and trained staff of 9 TAs. Developed new assignments and labs, including a new "Tensorflow in Pyret" lab. Organized placement exam and grading for 174 students.

Projects   *(more at zacharyespiritu.com)*

Weenix, *"Operating Systems" Semester Project*

A full operating system kernel in C, based on Unix. Built as a semester-long project.

GrblGrader

Modular, customizable system for grading and feedback distribution for Brown CS courses written in Google Apps Script. Currently used in three courses annually.

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*

Solver for NP-hard vehicle routing problems with storage capacity and maximum distance constraints, written in Python. Best performance out of 21 teams.

Math Battle!, *CEWeek 2016 "10Under20" Finalist*

Real-time, multiplayer, educational math experience on iOS with 4000+ downloads.