Zachary Espiritu

zacharyespiritu.com · zachary_espiritu@brown.edu

Education

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

Projects *(more on website)*

Weenix
An operating system kernel based on Unix, written in C. Features process management, file system interfaces, and virtual memory.

GrblGrader
Modular system for grading and feedback distribution for Brown CS courses written in Google Apps Script. Used in three courses, reaching ~300 students annually.

Vehicle Routing
Local search solver for NP-hard vehicle routing problems, written in Python. Best performance out of 21 teams in graduate-level course.

Snowy Sunrise
A real-time GPU raymarched scene featuring L-systems, screen-space volumetric lighting, and fast-approximate anti-aliasing. Written in C++ and GLSL.

Coursework

Computer Systems Security
Design and Analysis of Algorithms
Distributed Computer Systems
Human-Computer Interaction
Introduction to Computer Graphics
Logic for Systems (Formal Methods)
Operating Systems
Prescriptive Analytics
Programming Languages
User Interfaces and User Experience

Experience

Google   Summer 2020
Software Engineering Intern
Developed an open-source OpenSSL engine in C++ allowing OpenSSL-backed web servers to immediately perform HTTPS signing operations with Google Cloud HSM private keys without any source code modifications.

Brown PLT (Programming Languages Team)   Summer 2018
Undergraduate Researcher
Created new libraries and interfaces for Pyret, a functional scripting language designed for education, including a port of TensorFlow.js to Pyret.

Negotiatus   Summer 2016 and Summer 2017
Software Engineering Intern
Built several internal tools in Ruby on Rails designed to streamline Operations team workflows. Solely developed flagship, client-facing features (*Scheduled Orders*, *Notifications Center*). Wrote full-system test suite from scratch with 70% coverage.

Teaching *(* denotes Head Teaching Assistant)*

CSCI 1730: Programming Languages   Fall 2019 and Fall 2020*
Design and implementation of programming languages, with a security mindset focus through opaque "mystery language" exploration assignments. Hired and trained staff of 6 TAs. Edited and rewrote several assignments.

CSCI 1660: Computer Systems Security   Spring 2019* and Spring 2020*
Cryptography, web, operating systems, and networks. Hired and trained staff of 10 TAs; automated staff setup for projects using Linux VMs on Google Compute Engine, reducing setup times by up to ~92%. Developed major revamps of "hacking" projects in web security, operating systems, and secure system design.

CSCI 0190: Accelerated Intro to Computer Science   Fall 2018*
Functional programming, data structures, and algorithms. Hired and trained staff of 9 TAs. Organized summer placement exam for 174 students. Developed new assignments and labs, including a new "Tensorflow in Pyret" lab.

Department Service *(@ Brown CS)*

SPOC (Systems Programmer, Operator, and Consultant)   Spring 2019 — Present
Off-hours, on-call technical staff; one of 5 undergraduates supporting and maintaining the Linux systems in the department used by students, TAs, and faculty.

Meta Teaching Assistant (TA Program Coordinator)   Fall 2019 — Present
Coordinates hiring and training of 600 TAs each year across 50 courses; provides technical/logistical support as one of 2 undergrads for the department TA program. Provided department-wide support for COVID-19 remote learning transition.