Zachary Espiritu

zacharyespiritu.com • zachary_espiritu@brown.edu

Education

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

Projects *(more on website)*

Authorized PSI
Research with Roberto Tamassia on "partially" authorized private set intersection protocols.

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 in Google Apps Script. Used by 4 CS courses, reaching ~300 students / year.

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
Real-time GPU raymarched scene featuring L-systems, screen-space volumetric lighting, and FXAA. Written in C++ and GLSL.

Selected Coursework

Design and Analysis of Algorithms
Distributed Computer Systems
Human-Computer Interaction
Introduction to Computer Graphics
Logic for Systems (Formal Methods)
Prescriptive Analytics
Software Security and Exploitation

Experience

Encrypted Systems Lab Fall 2020
Undergraduate Researcher
Working with Seny Kamara on practical multi-party computation and encrypted search systems design to support public initiatives in Massachusetts.

Google Summer 2020
Software Engineering Intern
Developed an open-source OpenSSL engine in C++ allowing OpenSSL-backed web servers and TLS terminators 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 a port of TensorFlow.js for Pyret, a functional scripting language designed for education. Prototyped implementations for a Pyret Jupyter notebook "kernel".

Negotiatus Summer 2016 and 2017
Software Engineering Intern
Built internal Ruby on Rails tools to streamline Operations team workflows. Solely developed flagship, client-facing features (*Scheduled Orders*, *Notifications Center*).

Department Service *(@ Brown CS)*

SPOC (Systems Programmer, Operator, and Consultant) Spring 2019 – Present
Off-hours, on-call technical staff; one of 3 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.

Teaching *(* denotes Head Teaching Assistant)*

CSCI 1660: Computer Systems Security Spring 2019*, 2020*, and 2021*
Revamped web, OS, and secure systems design projects; created +30 new written questions related to compression, MPC, anon. networks, etc. reduced project setup times by ~92% by automating Linux VM creation on Google Compute Engine.

CSCI 1730: Programming Languages Fall 2019 and 2020*
PL with a security mindset focus. Edited and rewrote specs for 9 programming assignments; automated 60% of grading process via Gradescope autograders.

CSCI 0190: Accelerated Introduction to Computer Science Fall 2018*
CSCI 0040: Introduction to Scientific Computing Spring 2018
CSCI 0050: Data-Centric Introduction to Programming Fall 2017