CJ PARRA

PhD Candidate

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Education

Boston University	**Sept. 2024 – Present**
PhD candidate in Computer Science	*Boston, MA*

Dean's Fellow – Graduate Student Entrance Award

Boston University	**Sept. 2020 – May 2024**
Bachelor of Arts in Computer Science	*Boston, MA*

Relevant Coursework

- Computer Systems
- Operating Systems
- Computer Networking
- Distributed Systems
- Information Security
- Algorithms
- Probability in Computing
- Programming Languages

Experience

Boston University - Introduction to Computer Systems	**Jan 2023 – May 2023**
Teacher's Assistant	*Boston, MA*

- Played a significant role in updating and creating homework assignments and exam material from scratch, with a focus on x86-64 assembly and C programming. Collaborated with the course instructor to ensure assignments were aligned with the course objectives
- Led multiple weekly discussion sessions for a class of students, designed to impart a foundational understanding of upcoming lecture material, reinforce concepts in low-level programming, and provide assistance on assignments
- Suggested improvements to enhance the effectiveness of teaching material and provided direct support to students by teaching concepts and debugging x86-64 assembly and C code, both in group settings and one-on-one

Boston University - Introduction to Computer Systems	**Sep 2022 – Dec 2022**
Course Assistant	*Boston, MA*

- Conducted weekly office hours, offering individualized assistance to students seeking help on assignments, clarifying lecture material, and providing deeper insight into questions related to computer systems
- Engaged in weekly meetings with the course instructor and fellow student instructors to collaboratively enhance the course. Discussions focused on improving the overall learning experience for students, refining the course material, and optimizing teaching strategies
- Provided feedback and revisions on discussion material, lesson plans, and assignments, aiming to enhance the overall course content

Projects

BU The Game	*C, Assembly, M4*	**Jan 2023 – May 2023**

- Created a fully-fledged text-based game meant to guide students through learning the basics of C through carefully crafted bugs. This project encompassed every aspect of assignment creation, from crafting the source code, structuring to assignment format, and developing grading scripts. This project was designed to facilitate the integration of multiplayer servers and WebAssembly into the curriculum

GDB Treasure Hunt	*Assembly*	**June 2022 – August 2022**

- ∗ Developed an interactive treasure hunt within GDB in the form of multiple connected activities, with the goal of helping students become comfortable using the GDB debugger. This was designed to increase students' confidence with this important tool as a guiding resource for their coursework later in the semester

Technical Skills

Languages: C, ASM (IA32, AMD64, RISC-V), Bash, Python, LaTeX, Go, Java, OCaml, SQL, Javascript
Tools and Platforms: Git, Wireshark, VirtualBox, Make, GNU/Linux Toolchain (GCC), Docker, Verilog, MYSQL, MongoDB

Research Experience

Scalable and Elastic Systems Lab (SESA)   **Sept. 2024 – Present**

Graduate Student   *Boston, MA*
  * Begun a project to combine the EbbRT libraryOS (OSDI 2016) with more recent work in the lab on dynamic privilege –
    the ability to dynamically control the privilege level of an application. This project hopes to enable a unique model where
    EbbRT and Linux internals, such as device drivers, can be combined. Allowing for the creation of a more robust libOS
    that leverages Linux's capabilities, while minimizing effort on the programmer's part

Red Hat Collaboratory   **June 2023 – Present**

Undergraduate Research Assistant   *Boston, MA*
  * Contributed to the development of a 6502 simulator, enhancing its functionality by implementing trace features that
    enabled the export and storage of state vectors (a snapshot of all registers and system memory) for each instruction
    executed in a running program
  * Constructed experimental infrastructure for automating and conducting state vector studies
  * Worked and improved the underlying representations and operations on state vectors to enable machine learning
    exploration. Specifically exploiting sparse representation using spare Linux files and the GNU Multiple Precision
    Arithmetic Library(GMP)
  * Trained and evaluated the use of multilayer perceptrons in machine learning frameworks – such as FANN and PyTorch –
    with our state vector datasets
  * Conducted thorough analyses of our datasets after training, allowing for the identification of optimal models for our data
    set