Charles Hong

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Technical Skills

- **Languages:** C/C++, Python, Java, HTML5/CSS, Javascript
- **Tools:** MPI, CUDA, Protocol Buffers, OpenMP, React, Pandas, Git, LaTeX, Spreadsheets (Pivot Tables)

Experience

Graduate Student Researcher Jul. 2023 – Present

University of California, Riverside *Riverside, CA*

- Utilized C/C++, Python, and Protocol Buffer to develop a custom protobuf parser, achieving a functionality mirroring Google's API.
- Generated parser from .proto file schema using Python scripts, streamlining the development process and hitting key milestones.
- Led the creation of a parallel parser with faculty, reducing runtime significantly and enhancing efficiency.
- Conducted rigorous testing and benchmarking, aligning with best practices and continuously improving project requirements.

Teaching Assistant Jan. 2023 – Jun. 2023

University of California, Riverside *Riverside, CA*

- Graded tests for an upper division course on Discrete Structures, which covers asymptotic notation, number theory, advanced counting, and graph theory
- Implemented code autotester using polygon codeforces to reduce grading by 30%
- Developed study guides, quizzes, and video tutorials to increase student grades

Chair Feb 2021 – Jan 2022

Competitive Programming at UCR *Riverside, CA*

- Facilitated competitive programming practice contests over the weekends
- Developed a sign-up website using HTML and CSS for 120 contestants in the campus wide programming competition
- Led beginner workshops on basic C++ Standard Template Library
- Managed different sub-divisions and grew the club into a 25 member organization
- Competed in Southern California Regionals (programming contest) against other schools

Projects

MCASM | *C++*

- Parsed custom assembly language, which is converted into Minecraft commands
- Enables manipulation of control flow and arithmetic operations
- Performs error checks during compilation and provides precise error location to the user

Ray Tracer Program | *C++*

- Successfully completed a comprehensive ray tracing project
- Skillfully utilized provided skeleton code to implement pivotal components such as object intersection, shading, lighting, and the creation of an accelerated hit structure.
- Gained valuable hands-on experience in rendering techniques and algorithm optimization in the context of computer graphics.

Maze Game | *C*

- Designed and executed a captivating maze game as the final project for the embedded systems course.
- Visualized the game environment by using an LED Matrix with shift registers
- Integrated a joystick interface for character movement within the maze
- Incorporated an LCD Display to effectively communicate in-game messages to the player
- Programmed and managed the entire system using the ATMEGA 1284 microcontroller

Education

University of California, Riverside Riverside, CA

MS Computer Science | GPA 3.77 *Jan. 2023 – Dec. 2023*

- **Relevant Coursework:** Parallel Algorithms, Compiler Optimization, Deep Learning

University of California, Riverside Riverside, CA

BS Computer Science | GPA 3.89 | Magna Cum Laude *Aug. 2019 – Dec. 2022*

- **Relevant Coursework:** High Performance Computing, GPU Computing, Scientific Computing Graphics, Bioinformatics, Artificial Intelligence, Data Structures and Algorithms, Embedded Systems