Joshua Tlatelpa-Agustin
joshua.t@utah.edu | +1 (385) 245-9768 | joshagustint.github.io

EDUCATION

MS Computer Science (Thesis) **GPA: 4.0/4.0** **2025 - May 2026 (Expected)**
The University of Utah *Salt Lake City, Utah*

BS Computer Science **GPA: 3.28/4.0** **2022 - 2024**
The University of Utah *Final Year GPA: 3.96* *Salt Lake City, Utah*

Guest Student **GPA: 3.58/4.0** **2021 - 2023**
Salt Lake Community College *Salt Lake City, Utah*

Graduate Coursework: Adv. Compilers, Adv. Operating Systems, Interactive Computer Graphics; *In Progress:* Computer Architecture, Adv. Operating Systems II; *Enrolled:* Software Verification, HC Data Management, Adv. Computer Architecture

Undergrad Coursework: Computer Architecture, Algorithms & Data Structures, Discrete Structures, Object Oriented Programming, Models of Computation, Probability & Statistics, Software Practice 1 & 2, Computer Systems, Compilers, OS, Database Systems, Computer Graphics, Visualization for Data Science, Algorithms

SKILLS

- *Programming Languages:* C, C++, Rust, Python, Javascript, ASM (x86), Java, C#, R
- *Additional Skills:* Performance profiling, MySQL, Spanish (fluent)

Publications

- Zhaofeng Li, Jerry Zhang, Joshua Tlatelpa-Agustin, Xiangdong Chen, and Anton Burtsev. Understanding the Security Impact of CHERI on the Operating System Kernel. *In Proceedings of the Annual Computer Security Applications Conference (ACSAC)*, December 2025.
- Jerry Zhang, Joshua Tlatelpa-Agustin, and Anton Burtsev. DRAMHiTv2: Towards the fastest hash table operating at the speed of DRAM. *Submitted to the European Conference on Computer Systems (EuroSys)*, April 2026. (Title modified for anonymity.)

RESEARCH

CHERI *Accepted*

- Study of CHERI's (Capability Hardware Enhanced RISC Instructions) impact on OS kernels. Analysis of 440 Linux and FreeBSD kernel CVEs revealed that CHERI could prevent 60% of vulnerabilities, including the majority of critical privilege escalations.

DRAMHiTv2 *Submitted*

- A next-generation in-memory hash table that reaches hardware bandwidth limits and maximizes operational throughput through a multi-level prefetching scheme, a compute–memory–aware table layout, and a conflict-resolution strategy optimized for memory bandwidth utilization.

IPC *In-Progress*

- Investigating new hardware primitives for efficient and secure inter-process isolation. This work explores how practical hardware extensions can provide strong subsystem isolation in modern kernels with minimal overhead.

PROJECTS

JPL Compiler (class solo project)

- Developed a compiler for the JPL programming language. The project included a lexer, parser, type checker, simple optimizations, and assembly generation. Spec: https://github.com/utah-cs4470-sp23/class/blob/2023/spec.md
- *Technologies:* C++ (~12,000 lines), x86-64 asm

BF Compiler/Interpreter/Profiler (class solo projects *[graduate level]*)

- Developed an interpreter and compiler for BF, a minimalist, Turing-complete esoteric language. The compiler includes optimization passes for loop elimination and utilizes vector instructions in assembly generation to accelerate memory seeking. Spec: https://www2.gvsu.edu/miljours/bf.html
- *Technologies:* C++, x86-64 asm, SIMD, LLVM

Learning Management System (class project, group of two)

- Multi-phase project to develop a learning management system (LMS) resembling Canvas. Involved designing a database, creating SQL tables, building a web server, and online deployment.
- *Technologies:* C#, MySQL

xv6 OS Additions (class solo projects)

- Extended xv6 to include custom system calls and posix threads. This involved a lot of low level debugging and understanding of OS principles and organization.
- *Technologies:* C

OpenGL Project(s) (class solo projects *[graduate level]*)

- Wrote various real-time interactive graphics applications each utilizing one of the following techniques: transformations, shading, textures, render buffers, environment mapping, shadow mapping, tessellation, and instancing.
- *Technologies:* C++, OpenGL, GLFW, GLEW

HONORS AND AWARDS

Jerry Taylor Scholarship (Summer 2023)

This scholarship is designed to support second year students who have demonstrated course & character in response to a major challenge in life, or in pursuit of their education.

- $2,500 USD

Dean's List (University of Utah)

- Spring 2024 GPA: 3.925 12 credits
- Fall 2023 GPA: 4.00 12 credits

President's List (Salt Lake Community College)

- Summer 2021 GPA: 3.91 14 credits

Dean's List (Salt Lake Community College)

- Summer 2023 GPA: 3.56 18 credits
- Fall 2021 GPA: 3.60 16 credits
- Spring 2021 GPA: 3.69 16 credits

Pride in Academics 2022 (Salt Lake Community College)

Pride in Academics recognizes underrepresented students who have completed thirty or more credit hours while maintaining a cumulative grade point average of 3.5 or higher.

- GPA: 3.59