

Joshua Tlatelpa-Agustin

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EDUCATION

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|-------------------------------------|-----------------------------|-----------------------------------|
| MS Computer Science (Thesis) | GPA: 4.0/4.0 | 2025 - May 2026 (Expected) |
| <i>The University of Utah</i> | | <i>Salt Lake City, Utah</i> |
| BS Computer Science | GPA: 3.28/4.0 | 2022 - 2024 |
| <i>The University of Utah</i> | <i>Final Year GPA: 3.96</i> | <i>Salt Lake City, Utah</i> |
| Guest Student | GPA: 3.58/4.0 | 2021 - 2023 |
| <i>Salt Lake Community College</i> | | <i>Salt Lake City, Utah</i> |

Graduate Coursework: Adv. Compilers, Adv. Operating Systems, Interactive Computer Graphics, Computer Architecture (in-progress), Adv. Operating Systems II (in-progress)

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.

RESEARCH

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| CHERI | <i>Accepted</i> |
| <ul style="list-style-type: none">• Study of 440 Linux and FreeBSD kernel vulnerabilities, showing CHERI can prevent 60% of vulnerabilities including most critical privilege escalations. | |
| DRAMHiTv2 (high-performance hashtable) | <i>Submitted</i> |
| <ul style="list-style-type: none">• 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 | <i>In-Progress</i> |
| <ul style="list-style-type: none">• Investigating hardware support for low-overhead, fine-grained inter-process isolation. | |

PROJECTS

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| JPL Compiler (class solo project) |
| <ul style="list-style-type: none">• Developed a compiler for the JPL programming language as part of a programming-intensive course. 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/miljourn/bf.html>

- *Technologies:* C++, x86-64 asm, SIMD, LLVM

Learning Management System (class project, group of two)

- Implemented multi-phase project to develop a learning management system (LMS) resembling Canvas, involving designing a database, creating SQL tables, building a web server, and online deployment.

- *Technologies:* C#, MySQL

xv6 OS Additions (class solo projects)

- Expanded on xv6 (simple, Unix-like OS) which included adding custom system calls and implementing posix threads. With this came a lot of low level debugging and understanding of operating system 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)

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| • Spring 2024 | GPA: 3.925 | 12 credits |
| • Fall 2023 | GPA: 4.00 | 12 credits |

President's List (Salt Lake Community College)

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| • Summer 2021 | GPA: 3.91 | 14 credits |
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Dean's List (Salt Lake Community College)

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| • 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