Andrew Rodriguez

✉ aroday23@gmail.com   in drew-rwx

🌐 http://drew-rwx.website

Education

2023 –	**Ph.D. Computer Science, Texas State University (TXST)** Dissertation title: *High-Throughput Lossy and Lossless Compression of Scientific Data.*
2021 – 2023	**M.S. Computer Science, University of Texas Rio Grande Valley (UTRGV)** Thesis title: *Problems in Algorithmic Self-Assembly and a Genetic Approach to Patterns.*
2017 – 2021	**B.S. Computer Science, University of Texas at Austin (UT Austin)**

Employment History

2025	**Doctoral Teaching Assistant.** Department of Computer Science, Texas State University.
2022	**Software Engineer.** InvoiceCloud, Brownsville, Texas.
2021 – 2023	**Research Assistant.** Algorithmic Self-Assembly Research Group (ASARG), University of Texas Rio Grande Valley.
2018 – 2021	**Teaching Assistant.** Department of Computer Science, University of Texas at Austin.

Research Publications

Conference Proceedings

1   A. M. Akathoott, **A. Rodriguez**, and M. Burtscher, "Sleek: Compressing memory copies for floating-point data on gpus," in *Proceedings of the 40th IEEE International Parallel and Distributed Processing Symposium*, 2026.

2   **A. Rodriguez** and M. Burtscher, "On the compressibility of floating-point data in posit and ieee-754 representation," in *Proceedings of the SC '25 Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*, ser. SC Workshops '25, Association for Computing Machinery, 2025, pp. 300–306, ISBN: 9798400718717. 🔗 DOI: 10.1145/3731599.3767372.

3   **A. Rodriguez**, N. Azami, and M. Burtscher, "Adaptive per-file lossless compression of floating-point data," in *2024 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*, 2024, pp. 423–430. 🔗 DOI: 10.1109/IPDPSW63119.2024.00092.

4   R. M. Alaniz et al., "Complexity of reconfiguration in surface chemical reaction networks," in *Proc. of the 29th International Conference on DNA Computing and Molecular Programming (DNA'23)*, 2023.

5   R. M. Alaniz et al., "Covert computation in the abstract tile-assembly model," in *Proc. of the Symposium on Algorithmic Foundations of Dynamic Networks (SAND'23)*, 2023.

6   R. M. Alaniz et al., "Reconfiguration of linear surface chemical reaction networks with bounded state change," in *Proc. of the 35th Canadian Conference on Computational Geometry (CCCG'23)*, 2023.

7   S. C. Cirlos, T. Gomez, E. Grizzell, **A. Rodriguez**, R. Schweller, and T. Wylie, "Simulation of multiple stages in single bin active tile self-assembly," in *Proc. of the 20th International Conference on Unconventional Computation and Natural Computation (UCNC'23)*, 2023.

8 R. M. Alaniz et al., "Building squares with optimal state complexity in restricted active self-assembly," in *Proc. of the Symposium on Algorithmic Foundations of Dynamic Networks (SAND'22)*, J. Aspnes and O. Michail, Eds., ser. Leibniz International Proceedings in Informatics (LIPIcs), vol. 221, Dagstuhl, Germany: Schloss Dagstuhl – Leibniz-Zentrum für Informatik, 2022, 6:1–6:18, ISBN: 978-3-95977-224-2. 🔗 URL: https://drops.dagstuhl.de/opus/volltexte/2022/15948.

9 B. Fu, T. Gomez, E. Grizzell, **A. Rodriguez**, R. Schweller, and T. Wylie, "Reachability in population protocols is pspace-complete (short abstract)," in *The 24th Japan Conference on Discrete and Computational Geometry, Graphs, and Games (JCDCG3'22)*, 2022.

10 **A. Rodriguez**, "Reachability in pikmin cave sublevels is pspace-complete (short abstract)," in *The 24th Japan Conference on Discrete and Computational Geometry, Graphs, and Games (JCDCG3'22)*, 2022.

Journal Articles

1 R. M. Alaniz et al., "Reachability in restricted chemical reaction networks," *Theoretical Computer Science*, vol. 1056, p. 115 514, 2025, ISSN: 0304-3975. 🔗 DOI: https://doi.org/10.1016/j.tcs.2025.115514.

2 R. M. Alaniz et al., "Building squares with optimal state complexity in restricted active self-assembly," *Journal of Computer and System Sciences*, vol. 138, p. 103 462, 2023, ISSN: 0022-0000. 🔗 DOI: https://doi.org/10.1016/j.jcss.2023.103462.

Projects

LC Compression Framework	LC is a framework for automatically generating customized lossless and guaranteed-error-bounded lossy data-compression algorithms for individual files or groups of files on CPUs and GPUs.
AutoTile	A Tile Automata simulator created to assist in self-assembly research, written in Python.
Pattycake	A genetic algorithm written in Python that generates solutions to the Patterned self-Assembly Tile set Synthesis (PATS) problem.
Mini JavaScript Interpreter	A JavaScript interpreter that implements most of the language features. Written in Haskell.
Pascal Compiler	A Pascal compiler that implements most of the language features. Includes the lexical analyzer, parser, and code generator. Written using C, Lex, and Yacc
Find My Tune	Music curation iOS app that shares more of Spotify's API with the user, giving them more power and control over the user's music. Integrates with the user's Spotify account to keep music recommendations and playlists synced on both applications.
Guess That Song	A website where users can guess the ad-libs from musical artist Travis Scott on various songs and test their knowledge of his music. Written in pure JavaScript, hosted with Cloudflare workers.
PintOS	Expanded on a toy OS to include priority scheduling, argument passing on the stack, system calls for user programs, virtual memory, and a multi-level indexed file system.
JOS-On-JOS Para-Virtual Hypervisor	Designed a hypervisor that ran JOS as a guest on top of a JOS host. Implemented Guest OS bootstrapping, extended page tables, and hyper calls.

Awards and Honors

CS Research Excellence Award	Texas State University, 2024.
GAANN Fellow	Texas State University, 2023–2026.
First Place Graduate-Level Paper	Hack Research Hackathon, 2022.
Best Student Paper Award	Symposium on Algorithmic Foundations of Dynamic Networks, 2022.

Skills

Coding	Proficient: C++, CUDA, HIP/ROCm, OpenMP, Python, C, Java.
	Familiar: Rust, C#, Swift, Haskell, Lisp, JavaScript, HTML/CSS.
Operating Systems	Linux, Mac OS, Windows

Relevant Courses

TXST	CS 7331 High-Performance Computing
	CS 7389C Real-Time Systems
	CS 7333 Advanced Green Computing
	CS 7389D HPC@Scale
	CS 7315 Network Science
	CS 7332 Advanced Parallel Computing
	CS 7343 Mobile Networks and Computing
	MATH 7321 Graph Theory
UTRGV	CSCI 6356 Parallel Computing
	CSCI 6339 Theoretical Foundations of Computer Science
	CSCI 6333 Advanced Computer Architecture
	CSCI 6334 Advanced Operating Systems
UT Austin	C S 429 Computer Organization and Architecture
	C S 371P Object-Oriented Programming
	C S 439 Principles of Computer Systems
	C S 378 Virtualization
	C S 378 Symbolic Programming
	C S 375 Compilers
	C S 345 Programming Languages
	C S 371L IOS Mobile Computing