

Summary

Computer science Ph.D. with experience in systems software development, high-performance computing, and research computing support. Doctoral research involved developing a novel Persistent Memory Object (PMO) abstraction through Linux kernel modifications. Deep experience in C/C++ and Python programming, parallel computing, and performance evaluation, alongside infrastructure troubleshooting and technical documentation.

Technical Skills

- **Programming & Scripting:** C, C++, Python, Bash, C#, and Java.
- **Parallel Computing:** OpenMP, MPI, HPC cluster environments, SLURM workload manager, job script optimization
- **Simulations & Performance:** gem5, performance evaluation, benchmarking, code profiling, optimization.
- **Systems:** Linux kernel development, hardware/software interfaces, driver-level programming.
- **AI/ML Workload Support:** PyTorch, TensorFlow, GPU workload configuration and troubleshooting.

Experience

Postdoctoral Researcher & Collaborator: UCF, CompARCH Lab. *May 2024 - Present*

- Conduct research on SSD, NVMe, and Compute Express Link (CXL) devices, including their design and implementation with Persistent Memory Objects (PMOs) and new abstractions for SSD and CXL-based systems.
- Design, evaluate, and benchmark low-level systems software, focusing on performance, reliability, and security.
- Selected for UCF's Preeminent Postdoctoral Program (P3), targeting outstanding scholars who are beginning their postdoctoral training.
- Communicate complex technical research and provide mentorship to undergraduate and graduate students.
- Guided a four-person undergraduate senior design team developing defenses against Rowhammer attacks. Recognized among the top Computer Science projects at the Spring 2025 Senior Design Showcase.

Postdoctoral Scholar: UCF, Office of Postdoctoral Affairs (OPA). *October 2026 - Present*

- Design and develop automated data reporting pipelines and dashboards using Microsoft Power BI to streamline administrative analytics.
- Modernize data-collection workflows by transitioning legacy PDF documents to Dynamic Forms, and author comprehensive technical documentation and user guides for non-technical personnel.

Graduate Research Assistant: UCF, ARPERS Lab. *Nov 2020 - May 2024*

- Conducted Office of Naval Research funded research on Persistent Memory Objects (PMOs), a novel abstraction for persistent memory.
- Designed, implemented, and evaluated the performance and security of PMOs with different encryption schemes by modifying the Linux kernel.
- Developed reproducible experimental workflows and benchmarking scripts to evaluate PMOs.
- Supervised a four-member undergraduate senior design team from January-July 2023, assisting with porting programs to use PMOs and benchmarking their performance.

Research Assistant: UCF Advanced Research Computing Center (ARCC). *May 2016 - Oct 2020*

- Diagnosed and resolved SLURM job submission, scheduling, and queue issues, helping faculty, researchers, and students across the university configure batch scripts, resource allocations, and job dependencies efficiently.
- Assisted researchers with developing parallel code utilizing OpenMP and MPI implementations, as well as PyTorch and TensorFlow scripts to execute computational and AI/ML workloads.
- Worked with researchers to develop code in C, C++, Python, MATLAB, R, and FORTRAN.
- Wrote bash scripts for application and library builds to support software on the ARCC, and wrote multiple environment modules.

TeachLive Technical Support: UCF SREAL Lab and the College of Education. *Aug 2012 - May 2016*

- Provided real-time technical support for TeachLive, a virtual classroom environment for aspiring teachers. This included diagnosing and resolving hardware, software, and operational issues.
- Collaborated with faculty across multiple universities, including international collaborations.

Education

Doctor of Philosophy in Computer Science - University of Central Florida (UCF) - *May 2024*

Major Advisors: Dr. Mark Heinrich and Dr. Yan Solihin.

Dissertation: [The Crash Consistency, Performance, and Security of Persistent Memory Objects](#).

Master of Science in Computer Science - University of Central Florida - *May 2019*

Bachelor of Science in Computer Science - University of Central Florida - *December 2016*

Publications

- Derrick Greenspan et al., *Persistent Memory Objects on the Cheap*, International Conference on Supercomputing, 2025.
- Derrick Greenspan et al., *LOaPP: Improving the performance of Persistent Memory Objects via Low-Overhead at-rest PMO Protection*. International Symposium on Secure and Private Execution Environment Design, 2024.
- Derrick Greenspan et al., *Improving the Security and Programmability of Persistent Memory Objects*, International Symposium on Secure and Private Execution Environment Design, 2022.
- Derrick Greenspan, *LLAMA-automatic memory allocations: an LLVM pass and library for automatically determining memory allocations*. International Symposium on Memory Systems, September 2019.
- **Additional Publications:** Lead author of three workshop papers on persistent memory and systems security.