Skyler Ruiter

Email: sruiter@iu.edu
GitHub: github.com/skyler-ruiter
Website: skylerruiter.dev
LinkedIn: skylerruiter

Education

Indiana University Bloomington (IUB) — Bloomington, IN
Ph.D. in Intelligent Systems Engineering, GPA: 3.8 — Aug 2024–Current

- Track: Computer Engineering
- Minor: Computer Science
- Related Coursework:
  - HPC
  - Graph Analytics
  - Deep Learning Systems
  - Distributed Systems
  - Engineering Compilers
  - ML Signal Processing

Grand Valley State University (GVSU) — Grand Rapids, MI
B.S. in Computer Science, GPA: 3.9 — Aug 2020–Apr 2024

- Minor: Mathematics
- Related Coursework:
  - Theory of Computation
  - Linear Algebra II
  - Applied Machine Learning
  - Numerical Analysis
  - Algorithms Engineering
  - Scientific Computing

Professional Experiences

Graduate Research Assistant — Indiana University
Advisor: Dr. Fengguang Song

Error-Bound Lossy Compression for Scientific Data (FZ) — Aug 2024–Current

- FZGPUModules: GPU-accelerated graph composable compression pipeline builder for analytical workflows. https://github.com/szcompressor/FZGPUModules. Primary developer.
- Working on lossy error-bounded compression for scientific applications such as Advanced Photon Source data, creating tooling the further adoption of FZ compressors, and optimizing high-performance data reduction modules.

Graduate Teaching Assistant — Indiana University
Cloud Computing — Aug 2025–Dec 2025

- Held student office hours, supervised term project teams throughout semester, and graded assignments.

Summer Undergraduate Research Internship — Sandia National Labs
Advisor: Dr. Oksana Guba

Optimizing the E3SM Climate Model — May 2024–Aug 2024

- Studied HPC codes and systems by working to understand the redundant triangular solves in the atmosphere code (SCREAM) of the E3SM climate model.

Undergraduate Researcher — Applied Computing Institute (GVSU)
Advisors: Dr. Zachary DeBruine & Dr. Erin Carrier

IVSparse - Sparse Data Compression Library — Aug 2022–May 2024

- Created two proprietary compression formats which leverage present redundancy in data to allow for usable compressed data with a limited performance loss.
- Involved work in high performance computing (HPC), data compression, and data structure design.

Publications

- **Best Short Paper Award** **Skyler Ruiter**, Jiannan Tian, Fengguang Song. "FZModules: A Heterogeneous Computing Framework for Customizable Scientific Data Compression Pipelines." *2025 IEEE/ACM The 11th International Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD)*. St Louis, MO, November 16-21.
- Seth Wolfgang, **Skyler Ruiter**, Marc Tunnell, Timothy Triche Jr, Erin Carrier, Zachary DeBruine. "Value-Compressed Sparse Column (VCSC): Sparse Matrix Storage for Single-cell Omics Data." *2024 IEEE International Conference on Big Data (BigData)*. Washington D.C., December 15-18.

Talks

- (FZGPUModules) FZ/ZF Joint Workshop — Tampa FL, March 2026
- (FZGPUModules) ZF/FZ Joint Workshop — Washington DC., October 2025
- (FZGPUModules) FZ/ZF Joint Workshop — Sarasota FL, March 2025
- (IVSparse) IEEE BigData HPC-BOD Workshop Presentation — Washington DC., December 2024
- (IVSparse) IEEE Data Compression Conference Technical Presentation — Salt Lake City UT, March 2024
- (IVSparse) GVSU School of Computing Seminar Series — Allendale MI, February 2024
- (IVSparse/Genomic Modeling) GVSU Undergraduate Research Fair — Allendale MI, October 2023
- (IVSparse) Grand Rapids Tech Week: Engineering and Computing Showcase — Grand Rapids MI, September 2023

Extracurricular Activities

GVSU Computing Club President — Spring 2021–Spring 2024

- Networked with companies, brought in many professors and researchers, and ran events and meetings regularly.
- Mentored numerous other undergraduate students, helping achieve internships, begin research positions, and plan their educational and career goals.

Dean's Student Advisory Council — Spring 2022–Spring 2024

- Advised the dean of the Padnos College of Engineering and Computing with a small collection of other students from different disciplines.

Scholarships and Awards

- Luddy Doctoral AI Fellowship — Fall 2024
- Science Undergraduate Laboratory Internships (SULI) Award — Summer 2024
- P. Douglas Kindschi Undergraduate Research Fellowship — Spring 2024

Research Interests

- High Performance Computing
- Data Compression
- Scientific Computing
- Sparse Data Analysis

Tooling

- Languages/Libraries: C++, Python, PyTorch, Rust
- GPU Programming: CUDA, NCCL
- HPC Tooling: OpenMP, MPI, CMake
- Performance Portability: Kokkos, CUDASTF