

EDUCATION

Indiana University Bloomington (IUB)

Ph.D. in Information Systems Engineering, GPA: 3.8

Bloomington, IN

Aug 2024–Current

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

Grand Valley State University (GVSU)

B.S. in Computer Science, GPA: 3.9

Allendale, MI

Aug 2020–Apr 2024

- Minor: Mathematics
- Related Coursework:
 - Theory of Computation
 - Numerical Analysis
 - Linear Algebra II
 - Algorithms Engineering
 - Scientific Computing - *Independent Study*

RESEARCH EXPERIENCES

Graduate Research Assistant

Indiana University

Advisor: Dr. Fengguang Song

Error-Bound Lossy Compression for Scientific Data (FZ)

Aug 2024–Current

- FZModules: A modular compression framework for heterogeneous error-bounded lossy compression of scientific data. <https://github.com/szcompressor/FZModules>. 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.

Summer Undergraduate Research Internship

Sandia National Labs

Advisor: Dr. Oksana Guba

Optimizing the E3SM Climate Model

May 2024–Aug 2024

- HPC internship at a Department of Energy National Lab. Achieved through a Sustainable Horizons Institute workshop.
- Worked towards understanding redundant solves in the world class E3SM climate model, helping maximize its potential for exascale applications.

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.

Probabilistic Modeling of Genomics Data with Variational Autoencoders

Sep 2023–Jan 2024

- Aims to train a variational autoencoder on genetic data to help predict patient risk based on genetic factors.

PUBLICATIONS

- **[BigData '24]** 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.

EXTRACURRICULAR ACTIVITIES

GVSU Computing Club President

Spring 2021–Spring 2024

- Worked to bring up a new generation of club leadership before graduation.
- 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.

International Collegiate Programming Contest

Spring & Fall 2023

- Volunteered during contest preparations and competed in event.

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

TOOLING

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

PRESENTATIONS

- (FZ GPU Module Library) FZ ZF Joint Workshop at Sarasota Spring 2025
- (IVSparse) IEEE BigData HPC-BOD Workshop Presentation Fall 2024
- (IVSparse) IEEE Data Compression Conference Technical Presentation Spring 2024
- (IVSparse) GVSU School of Computing Seminar Series Spring 2024
- (IVSparse/Genomic Modeling) GVSU Undergraduate Research Fair Fall 2023
- (IVSparse) Grand Rapids Tech Week: Engineering and Computing Showcase Fall 2023
- (IVSparse) Grand Valley State University Student Scholar’s Day Spring 2023