

DAVID KRASOWSKA

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Summary

David Krasowska is a Ph.D. candidate at Northwestern University, advised by Dr. Peter Dinda. His research journey began during his undergraduate studies at Clemson University where he collaborated with Argonne National Laboratory to explore lossy compression for optimizations in HPC scientific applications. He received the DOE Computational Science Graduate Fellowship to fund his graduate studies. Currently, he is exploring scheduling applications across distributed heterogeneous systems with Dr. Pat McCormick and Dr. Li Tang at Los Alamos National Laboratory.

Experience

Visiting Student, Los Alamos National Laboratory

June 2024 – August 2024

- Adding support for UPMEM processing in memory (PIM) on Legion runtime system.
- Evaluation of Legion task-based programming models on PIM distributed clusters (in progress HPDC).
- Researching automated mapping of application kernels onto distributed heterogeneous systems.

Research Aide, Argonne National Laboratory

June 2022 – June 2023

- Expansion of DRBSD-7 work to 3D datasets and black-box regression model (IJHPCA).
- Best ACM SRC Poster at SC '22 for undergraduates.
- Contributed to Libpressio, an Argonne library for compression.

High Performance Computing Creative Inquiry, Clemson University

June 2021 – December 2022

- Best poster at Indy Student Cluster Competition at SC '22.
- Student Cluster Competition at SC '21.
- Collaboration with Dell and Intel to configure a pareto optimal performance (wattage) cluster.
- Set up a distributed cluster with package managers, applications, and benchmarks.

Undergraduate Student Researcher, Clemson University

May 2021 – May 2022

- Lossy compression research with Argonne National Laboratory and Clemson University FTHPC.
- Analyzing statistical correlations within scientific 2D datasets in relation to compression performance.
- Publication at DRBSD-7 held during SC '21.

Peer-Reviewed Publications

A Lightweight, Effective Compressibility Estimation Method for Error-bounded Lossy Compression

A. Ganguli, R. Underwood, J. Bessac, **D. Krasowska**, J. C. Calhoun, S. Di, and F. Cappello. IEEE International Conference on Cluster Computing (CLUSTER). doi:10.1109/CLUSTER52292.2023.00028

Black-Box Statistical Prediction of Lossy Compression Ratios for Scientific Data

R. Underwood, J. Bessac, **D. Krasowska**, J. C. Calhoun, S. Di, and F. Cappello. The International Journal of High Performance Computing Applications (IJHPCA). doi:10.1177/10943420231179417

Exploring Lossy Compressibility through Statistical Correlations of Scientific Datasets

D. Krasowska, J. Bessac, R. Underwood, J. C. Calhoun, S. Di, and F. Cappello. 7th International Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD-7). doi:10.1109/DRBSD754563.2021.00011

Awards

(2023) DOE Computational Science Graduate Fellowship Recipient

(2022) First Place for ACM Undergraduate Student Research Competition at Supercomputing

(2022) Best Poster IndySCC22 at Supercomputing

Teaching / Mentoring

(2025 Winter) CS 343: Operating Systems (TA)

(2024-25) Zhehao Zhu, master's research

Education

Northwestern University, Evanston, IL

Ph.D. Candidate in Computer Science, Current

M.S. in Computer Science

Clemson University, Clemson, SC

B.S. in Computer Engineering, 20222022)