

# DAVID KRASOWSKA

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## SUMMARY

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David Krasowska is a Ph.D. student at Northwestern University, advised by Dr. Peter Dinda. His research journey began with his mentor during his undergraduate degree at Clemson University, Dr. Jon C. Calhoun. Under his mentor, he collaborated with Argonne to explore lossy compression for optimizations in HPC scientific applications. He was a visiting student at Argonne National Laboratory under Dr. Julie Bessac and Dr. Franck Cappello. This research has led to publications and awards. He has received the DOE Computational Science Graduate Fellowship to fund his studies. At Northwestern, David is exploring processing near memory utilization for datacenters to create a data-centric design.

## EXPERIENCE

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### Research Aide, Argonne National Laboratory

*June 2022 – June 2023*

- Continuation of work during time as undergraduate student researcher at Clemson.
- Expansion to 3D datasets and sensitivity data analysis on our generated machine model.
- 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*

- Participant in the Student Cluster Competition (SCC) at SC '21.
- Participant in the Indy SCC at SC '22 and won best poster.
- Collaboration with Dell and Intel to build a cluster optimized for greatest performance per watt.
- Set up schedulers (OpenPBS), package managers (Spack), applications (Quantum Espresso), and benchmarks (HPCG). Also gained knowledge of parallel computing with MPI.

### Undergraduate Student Researcher, Clemson University

*May 2021 – May 2022*

- Lossy compression research with Argonne National Laboratory and Clemson University FTHPC using the Palmetto Cluster.
- Analyzing statistical correlations within 2D datasets in comparison to compression performance.
- Presented during SC '21 at the 7th International Workshop on Data Analysis and Reduction for Big Scientific Data workshop with a publication.

### Undergraduate Student Researcher, Clemson University

*January 2022 – May 2022*

- Region of interest compressibility research in collaboration with Los Alamos National Laboratory and Clemson University FTHPC using the Palmetto Cluster.
- Determining methods to achieve the highest compressibility for images from a Laser Powder Bed Fusion (LPBF) EOS X printer in the SIGMA division within LANL.

## PEER-REVIEWED PUBLICATIONS

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

Underwood R, Bessac J, Krasowska D, Calhoun JC, Di S, Cappello F. Black-box statistical prediction of lossy compression ratios for scientific data. The International Journal of High Performance Computing Applications. 2023. 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, "Exploring Lossy Compressibility through Statistical Correlations of Scientific Datasets," 2021 7th International Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD-7), St. Louis, MO, USA, 2021, pp. 47-53, doi: 10.1109/DRBSD754563.2021.00011.

## **AWARDS**

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DOE Computational Science Graduate Fellowship Recipient '23

First Place for ACM Student Research Competition: Undergraduate Poster at Supercomputing '22

Best Poster IndySCC22 at Supercomputing '22

## **EDUCATION**

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**Northwestern University**, Evanston, IL

Ph.D. Student in Computer Science, 2023 - Current

**Clemson University**, Clemson, SC

B.S. in Computer Engineering, GPA 3.7/4.0, 2019 – 2022

## **TECHNICAL SKILLS**

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Top Languages:	C, C++, Python
Other Languages:	VHDL, MATLAB, CUDA, MPI
Skills:	LLVM, RISC-V, Databases