Chris Egersdoerfer

CS Researcher / Software Developer

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Education

2024-Present — **University of Delaware - Newark, DE**
Ph.D. in Computer Science (Expected Spring 2028)

2023-2024 — **University of North Carolina at Charlotte - Charlotte, NC**
Graduate coursework in Computer Science

2019-2022 — **University of North Carolina at Charlotte - Charlotte, NC**
B.S. in Computer Science, Summa Cum Laude

Research Experience

2024-Present — **Graduate Research Assistant - University of Delaware**

- Developed an LLM agent for diagnosing I/O performance bottlenecks by analyzing HPC application I/O telemetry
- Developed an autonomous tuning engine for parallel file systems by designing a multi-agent closed-loop system enabling rapid improvement of parameter settings
- Built a benchmark of realistic telemetry analysis tasks spanning over two years' worth of Polaris system data and used it to systematically evaluate LLM agents

Jun-Aug 2026 — **Graduate Research Aide - Argonne National Laboratory, Lemont, IL**

- Built a Slurm/Lustre testbed on CloudLab with fault injection across ~30 storage, network, and node-level fault types to evaluate LLM agents for autonomous HPC storage monitoring
- Designed multi-agent monitoring workflows and a grading framework that scores impact detection, root-cause attribution, and incident escalation against injected ground truth

Jun-Aug 2025 — **W.J. Cody Associate - Argonne National Laboratory, Lemont, IL**

- Created a small evaluation suite of telemetry data analysis tasks for LLM agents derived from real tasks extracted from existing published works
- Developed an internal web service for ANL staff to submit telemetry analysis tasks in natural language; the agent executed SQL and Python workflows over 2+ years of Polaris production data and returned complete Jupyter notebooks with results.

2023-2024 — **Graduate Research Assistant - UNC Charlotte**

- Investigated the use of LLMs for anomaly detection in parallel file system logs

- Applied traditional ML-based classification techniques to predict severity of I/O interference among concurrent applications

2021-2023 **Undergraduate Research Assistant - UNC Charlotte**

- Worked on anomaly detection in parallel file system logs using semantic embedding, high-dimensional clustering, and bi-directional LSTM sequence classification models

Jun-Aug 2022 **Summer Research Intern - Virginia Commonwealth University**

- Worked on improving dataset quality for domain-specific chatbots (pre-ChatGPT)

Industry Experience

2022-2024 **Software Developer - Radius Group, New York, NY**
Part-time, Remote

- Built supply-demand gap forecasting models for Charlotte-area employers (e.g. Atrium Health, Novant Health, Truist, etc.), integrating public labor market data at regional, state, and national levels with private employer data
- Designed and implemented a PostgreSQL database to securely store HRIS and ATS data from Charlotte-area employers
- Designed and implemented a high-performance Next.js backend to serve a data-visualization web app presented to members of the Charlotte Executive Leadership Council

2020-2022 **Backend Developer - IBM, Armonk, NY**
Part-time, Remote

- Implemented and maintained test automation modules for IBM Cloud VMware services
- Improved load times of an internal test automation observability platform by 3x through backend refactoring
- Redesigned automation job configuration workflows to improve usability and flexibility

Conference Publications

2026 **Understanding Reliability Bottlenecks in LLM Agents for HPC I/O Telemetry Analysis**
C. Egersdoerfer, O. Yildiz, K. Harms, R. Latham, R. Ross, and D. Dai
Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis (SC '26), Chicago, IL, Nov. 2026

2025 **STELLAR: Storage Tuning Engine Leveraging LLM Autonomous Reasoning for High Performance Parallel File Systems**
C. Egersdoerfer, P. Carns, S. Snyder, R. Ross, and D. Dai
Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis (SC '25), St. Louis, MO, Nov. 2025
https://dl.acm.org/doi/10.1145/3712285.3759887

2025 **IOAgent: Democratizing Trustworthy HPC I/O Performance Diagnosis Capability via LLMs**
C. Egersdoerfer, A. Sareen, J. L. Bez, S. Byna, D. D. Xu, and D. Dai
Proceedings of the 2025 International Parallel and Distributed Processing Symposium (IPDPS '25), Milano, Italy, Jun. 2025
https://ieeexplore.ieee.org/document/11078545

2023 **Drill: Log-based Anomaly Detection for Large-scale Storage Systems Using Source Code Analysis**
D. Zhang, **C. Egersdoerfer**, T. Mahmud, M. Zheng, and D. Dai
Proceedings of the 2023 International Parallel and Distributed Processing Symposium (IPDPS '23), St. Petersburg, FL, May 2023
https://ieeexplore.ieee.org/document/10177460

Posters and Workshops

2025 **Augmenting LLMs for HPC I/O Performance Diagnosis**
C. Egersdoerfer, A. Sareen, J. L. Bez, S. Byna, D. D. Xu, and D. Dai
Poster at the 2025 International Conference on Scalable Scientific Data Management (SSDBM), Columbus, OH, Jul. 2025
https://ssdbm.org/2025/accepted-posters.html

2024 **Understanding and Predicting Cross-Application I/O Interference in HPC Storage Systems**
C. Egersdoerfer, Md. H. Rashid, D. Dai, B. Fang, and N. Tallent
Proceedings of the SC '24 Workshops of the International Conference on High Performance Computing, Network, Storage, and Analysis (SC-W '24), Atlanta, GA, Nov. 2024
https://dl.acm.org/doi/10.1109/SCW63240.2024.00174

2024 **ION: Navigating the HPC I/O Optimization Journey using Large Language Models**
C. Egersdoerfer, A. Sareen, J. L. Bez, S. Byna, and D. Dai
Proceedings of the 16th ACM Workshop on Hot Topics in Storage and File Systems (HotStorage '24), Santa Clara, CA, Jul. 2024
https://dl.acm.org/doi/10.1145/3655038.3665950

2023 **Early Exploration of Using ChatGPT for Log-based Anomaly Detection on Parallel File Systems Logs**
C. Egersdoerfer, D. Zhang, and D. Dai
Poster in the Proceedings of the 32nd International Symposium on High-Performance Parallel and Distributed Computing (HPDC '23), Orlando, FL, Jun. 2023
https://dl.acm.org/doi/10.1145/3588195.3595943

2022 **ClusterLog: Clustering Logs for Effective Log-based Anomaly Detection**
C. Egersdoerfer, D. Zhang, and D. Dai
2022 IEEE/ACM 12th Workshop on Fault Tolerance for HPC at eXtreme Scale (FTXS '22), Dallas, TX, Nov. 2022
https://ieeexplore.ieee.org/document/10024030

Awards

2026 **Future Leaders of AI Doctoral Consortium - ACM AI Leadership Summit**
Selected as 1 of 53 (1 of 7 in Systems & Networking) invited participants for the Future Leaders of AI Doctoral Consortium at the 2026 ACM AI Leadership Summit.

2025 **Computer & Information Sciences Outstanding Graduate Research Assistant - University of Delaware**
Merit-based award given to 1-2 students annually in the CIS department

2025 **Department Travel Award for Outstanding Conference Publications - University of Delaware**
Awarded to students with first-author papers at top conferences

2025 **Winner of the Scalable Storage Competition (SSC24/25) hosted by GWDG (Individual track)**
Awarded annually to one individual in the individual track of the competition

2022 **Mathematics and Computer Science Oral Presentation Award - UNC Charlotte**
Awarded to the top student presenter at the UNC Charlotte Undergraduate Research Conference

Languages

Fluent **German**
Reading, writing, speaking, listening

Fluent **English**
Reading, writing, speaking, listening