

MD HASANUR RAHMAN

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EDUCATION

University of Florida PhD in Electrical and Computing Engineering Advisor: Guanpeng Li	<i>current</i>
University of Iowa MS in Computer Science	<i>2024</i>
Bangladesh University of Engineering and Technology BS in Computer Science and Engineering	<i>2019</i>

RESEARCH INTERESTS

High Performance Computing (HPC), Dependable System Design, Lossy Compression, Applied Machine Learning, Parallel Computing, Large Language Models (LLMs)

PUBLICATIONS

Peer-Reviewed Publications

- **Modeling Rate-Distortion for Endpoint-Aware Lossy Compression in Scientific Data Transfer**
Md Hasanur Rahman, Sheng Di, Guanpeng Li, Franck Cappello
IEEE International Performance Computing and Communications Conference (IPCCC'25)
Acceptance rate: 32.1%
- **Deploying Lightweight Input-Aware Selective Instruction Duplication in HPC Applications**
Md Hasanur Rahman, Guanpeng Li
ACM International Conference for High-Performance Computing, Networking, Storage and Analysis (SC'25)
Acceptance rate: 21.2%
- **A Generic and Efficient Framework for Estimating Lossy Compressibility of Scientific Data**
Md Hasanur Rahman, Sheng Di, Guanpeng Li, Franck Cappello
IEEE International Conference on Massive Storage Systems and Technology (MSST'24)
- **DRUTO: Upper-Bounding Silent Data Corruption Vulnerability in GPU Applications**
Md Hasanur Rahman, Sheng Di, Shengjian Guo, Xiaoyi Lu, Guanpeng Li, Franck Cappello
IEEE International Parallel & Distributed Processing Symposium (IPDPS'24)
Acceptance rate: 25.0%
- **Investigating The Impact of Transient Hardware Faults on Deep Learning Neural Network Inference**
Md Hasanur Rahman, Sabuj Laskar, Guanpeng Li
Journal of Software Testing, Verification and Reliability (STVR'24)
Impact Factor: 1.267

- **A Feature-Driven Fixed-Ratio Lossy Compression Framework for Real-World Scientific Datasets**
Md Hasanur Rahman, Sheng Di, Kai Zhao, Robert Underwood, Guanpeng Li, Franck Cappello
IEEE International Conference on Data Engineering (ICDE'23)
Acceptance rate: 19.1%
- **Peppa-X: Finding Program Test Inputs to Bound Silent Data Corruption Vulnerability in HPC Applications**
Md Hasanur Rahman, Aabid Shamji, Shengjian Guo, Guanpeng Li
ACM International Conference for High-Performance Computing, Networking, Storage and Analysis (SC'21)
Acceptance rate: 23.6%
- **Significantly Improving Fixed-Ratio Compression Framework for Resource-limited Applications**
Tri Nguyen, Md Hasanur Rahman, Sheng Di, Michela Becchi
The 53rd International Conference on Parallel Processing (ICPP'24)
Acceptance rate: 29.0%
- **Characterizing Deep Learning Neural Network Failures between Algorithmic Inaccuracy and Transient Hardware Faults**
Sabuj Laskar, Md Hasanur Rahman, Bohan Zhang, Guanpeng Li
IEEE Pacific Rim International Symposium on Dependable Computing (PRDC'22)
Acceptance rate: 36.0%

Workshop Publications

- **Characterizing Spatial Data Traits for Modeling Generic Lossy Rate-Distortion Quality**
Md Hasanur Rahman, Sheng Di, Guanpeng Li, Franck Cappello
IEEE International Parallel & Distributed Processing Symposium Workshops (IPDPS-W'25)
- **LibPressio-Predict: Flexible and Fast Infrastructure For Inferring Compression Performance**
Robert R. Underwood, Sheng Di, Sian Jin, Md Hasanur Rahman, Arham Khan, Franck Cappello
ACM International Workshop on Data Reduction for Big Scientific Data (DRBSD-9) in Conjunction with SC'23
- **TensorFI+: A Scalable Fault Injection Framework for Modern Deep Learning Neural Networks**
Sabuj Laskar, Md Hasanur Rahman, Guanpeng Li
IEEE International Workshop on Resiliency, Security, Defences and Attacks (ISSRE-W'22)

Review Articles

- **A Survey on Error-Bounded Lossy Compression for Scientific Datasets**
Sheng Di, Jinyang Liu, Kai Zhao, Xin Liang, Robert Underwood, Zhaorui Zhang, Milan Shah, Yafan Huang, Jiajun Huang, Xiaodong Yu, Congrong Ren, Hanqi Guo, Grant Wilkins, Dingwen Tao, Jiannan Tian, Sian Jin, Zizhe Jian, Daoce Wang, Md Hasanur Rahman, Boyuan Zhang, Shihui Song, Jon Calhoun, Guanpeng Li, Kazutomo Yoshii, Khalid Alharthi, Franck Cappello
ACM Computing Surveys 2025

WORK EXPERIENCES

Argonne National Laboratory
Graduate Remote Research Intern

2021-2025
USA

Samsung Research
Software Engineer

2019-2021
Bangladesh

PROFESSIONAL SERVICE

Academic Awards

UIowa Graduate Research Award Finalist 2025

Conference Activities

ICDE'23 Student Volunteer, SC'24 Student Volunteer

Conference Grant Award

ICDE'23, SC'24

Reviewer

DSN'24 Artifact Evaluation

Subreviewer

HiPC'25, ISSRE'24, ISSRE'23, HPDC'23, DSN'23, ISSRE'22,
MiddleWare'22, HPDC'22, DSN'22, SELSE'22, PRDC'21

Student Mentoring

Ahmer Jamil (2025), Abdullah Naveed (2023-25), Sabuj Laskar (2022)