# MD HASANUR RAHMAN

University of Florida ⋄ hasanur-rahman.github.io

## EDUCATION

**University of Florida** *2025-present*
PhD in Electrical and Computing Engineering
Advisor: Guanpeng Li

**University of Iowa** *2021-2025*
PhD in Computer Science
Advisor: Guanpeng Li

**University of Iowa** *2021-2024*
MS in Computer Science

**Bangladesh University of Engineering and Technology** *2015-2019*
BSc in Computer Science and Engineering

## RESEARCH INTERESTS

HPC Fault Tolerance, HPC Data Reduction

## PUBLICATIONS

### Peer-Reviewed Publications

- **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**

- **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** *2021-present*
*Visiting Student* *USA*

**Samsung Research** *2019-2021*
*Software Engineer* *Bangladesh*

## PROFESSIONAL SERVICE

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| **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) |