Tabassum Mahmud

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EDUCATION

Ph.D. Candidate in Computer Engineering   Fall2019-Present
Iowa State University   GPA:3.76/4
Ames, IA
B.Sc. in Electrical and Electronic Engineering   Mar2013-Dec2017
Chittagong University of Engineering and Technology   GPA:3.71/4
Bangladesh

EXPERIENCE

Research Assistant-Data Storage Lab, ECpE, ISU   Fall2019 - Present

- Explored configuration related issues in the storage stack and storage applications.
- Surveyed existing techniques for bug detection, e.g. Static Analysis, Dynamic Analysis (Fuzzing), Symbolic Execution (S2E, KLEE).
- Exploring write amplification problem in Copy-on-write file systems, e.g., btrfs, ZFS.

Teaching Assistant ECpE, ISU   Spring2023, Spring2024

- CprE 308: Operating System (Spring-23)
- CprE 563: Advanced Data Storage (Spring-24)

Network Engineer-Fiber@Home, Dhaka, Bangladesh   Mar2018 - Nov2018

- Worked in the integration section of Info-Sarkar-III project.

RESEARCH INTEREST

Systems Reliability & security, Storage Systems, Distributed Systems

RESEARCH PROJECTS

- **Configuration bug detection in the storage stack and storage applications**
  In this project, we studied configuration bugs in the storage stack and identified the pattern and critical cross-component configuration dependencies. We identified the critical cross-component dependencies in the storage stack automatically and use those to check the behavior of the programs when following and violating the dependencies.
- **Write Amplification Reduction of Copy-on-Write File Systems**

SKILLS

- **Programming Language**
  C, C++, Python
- **Software Testing**
  LLVM, American Fuzzy Lop (AFL), KLEE, S2E
- **Technology**
  Git, Docker, GCE, AWS
- **Systems**
  Linux File Systems architecture (Specially EXT4, Btrfs), File System Utility Packages (Specially E2fsprogs), File System Testing Suite (xfsprogs)

PUBLICATIONS

- **Drill: Log-based Anomaly Detection for Large-scale Storage Systems Using Source Code Analysis.**
  Di Zhang, Chris Egersdoerfer, **Tabassum Mahmud**, Mai Zheng, Dong Dai.
  Proceedings of the 37th IEEE International Parallel Distributed Processing Symposium (IPDPS), 2023.
- **Analyzing Configuration Dependencies of DAX File Systems.**
  Tabassum Mahmud, Om Rameshwar Gatla, Duo Zhang, Carson Love, Ryan Bumann and Mai Zheng.
  14th Annual Non-Volatile Memories Workshop (NVMW), 2023.
- **CONFD: Analyzing Configuration Dependencies of File Systems for Fun and Profit.**
  Tabassum Mahmud, Om Rameshwar Gatla, Duo Zhang, Carson Love, Ryan Bumann and Mai Zheng.
  Proceedings of the 21st USENIX Conference on File and Storage Technologies (FAST), 2023.
- **On the Reproducibility of Bugs in File-System Aware Storage Applications.**
  Duo Zhang, **Tabassum Mahmud**, Om Rameshwar Gatla, Runzhou Han, Yong Chen, and Mai Zheng.
  Proceedings of the 16th IEEE International Conference on Networking, Architecture, and Storage (NAS), 2022.
- **Understanding Configuration Dependencies of File Systems.**
  Tabassum Mahmud, Duo Zhang, Om Rameshwar Gatla and Mai Zheng.
  Proceedings of the 14th ACM Workshop on Hot Topics in Storage and File Systems (HotStorage), 2022. *Best Paper Nominee*
  Accepted Poster and WiP:

ACCEPTED POSTER AND WIP

- **Revisiting Computational Storage for Data Integrity and Security.** (Accepted)
  Chao Shi, Anthony Manschula, **Tabassum Mahmud**, Zeren Yang, Yong Chen, Jim Wayda, Matthew Wolf, Byungwoo Bang, Mai Zheng Poster Sessions, The 38th International Conference on Massive Storage Systems and Technology (MSST), 2024
- **Understanding Configuration Issues in Storage Systems.**
  Tabassum Mahmud, Mai Zheng.
  Work in Progress (WiP) & Poster Sessions, 20th USENIX Conference on File and Storage Technologies (FAST), 2022.

COURSES TAKEN

- High-Performance Communication Networks (CprE 541) (Fall-22)
- Applied Formal Methods (ComS 507) (Fall-21)
- Distributed Systems (CprE 550) (Spring-21)
- Design and Analysis of Algorithms (ComS 511) (Fall-20)
- Network Protocols and Security (CprE 530) (Fall-20)
- Statistical Theory for Research Workers (Stat 588) (Spring-20)
- Advanced Data Storage (CprE 563)(Spring-20)
- Real-Time Systems (CprE 554) (Fall-19)

AWARDS AND SCHOLARSHIP

- Received "**Best Paper Nominee**" at `HotStorage'22`
- Received **USENIX** diversity grant to attend `FAST'20, FAST'22, FAST'23` conference

OTHER PROFESSIONAL ACTIVITIES

- Served as **Artifact Evaluation Committee member** for Symposium on Operating Systems Principles (**SOSP**), 2023
- Selected as a **Mentee** in USENIX Conference on File and Storage Technologies **FAST** 2022 Mentorship Program
- Served as **sub-reviewer** for IEEE International Parallel & Distributed Processing Symposium (**IPDPS**), 2022
- Served as **sub-reviewer** for Workshop for REU Research in Networking and Systems (**REUNS**), 2022
- Selected as a **Mentee** in **CCS iMentor** 2021 Workshop