

Mohayeminul Islam

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RESEARCH

Research Interest: *Library Migration, Software Engineering*

Software applications typically depend on libraries that evolve independently of the application. Due to many reasons; e.g., going out of maintenance, or not supporting desired features; application developers may want to replace the existing library with an alternative one, a process known as *Library Migration*. My research goal is to better understand the process and develop tools and techniques for efficient and reliable library migration.

Publications

- A. Jha, M. Islam, and S. Nadi. “JTestMigBench and JTestMigTax: A benchmark and taxonomy for unit test migration”. In Proceedings of the IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER '23), 2023. (Under review)
- S. Ho, V. Majdinasab, M. Islam, D. Costa, E. Shihab, F. Khomh, S. Nadi and M. Raza. “An Empirical Study on Bugs Inside PyTorch”. In Proceedings of the IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER '23), 2023. (Under review)
- M. Islam, T. Toma, M. Selim, A. Gias, and M. Shah. “Design Migration from Procedural to Object-Oriented Paradigm by Clustering Data Call Graph.” International Journal of Information Engineering and Electronic Business, vol. 8, no. 2 (2016): 1.
- T. Toma, M. Islam, M. Shoyaib, and S. Islam. “A Dependency Graph Generation Process for Client-side Web Applications.” International Journal of Information Engineering and Electronic Business, vol. 7, no. 2 (2015): 38.

Course Projects

- *API Migration with Program Synthesis: A Proof of Concept*, Winter 2021, Group Project
- *An Empirical Study of Parallel Refactorings in Merge Conflicts*, Fall 2020, Individual Project
- *OO.js: Object-Oriented Design Suggestions for JavaScript Programs*, Fall 2020, Individual Project

EDUCATION

Ph.D. in Computer Science (in progress)

Started in September 2020

Department of Computing Science, University of Alberta, Canada

Affiliations:

- Sarah Nadi, The Software Maintenance and Reuse Lab <https://sarahnadi.org/smr>
- CREATE SE4AI <https://se4ai.org/>

Master of Science in Software Engineering

Completed in June 2014

Institute of Information Technology, University of Dhaka, Bangladesh

Affiliation: Shah Khaled, IITDU Optimization group <https://sites.google.com/site/iitduoptimization>

Bachelor of Information Technology

Completed in December 2012

Institute of Information Technology, University of Dhaka, Bangladesh

PROGRAMMING LANGUAGES

- Worked extensively: Python, C#, JavaScript, TypeScript, Java
- Familiar: C, C++, Ruby, Haskell, and a few others

TEACHING EXPERIENCE

2+ YEARS

Islamic University of Technology

- Assistant Professor November 2019 – April 2021
- Lecturer September 2018 – October 2019

Courses Taught

- Software Design and Architecture (Summer 2020)
- Design Patterns (Winter 2020)
- Object Oriented Concepts - II (Winter 2019, Winter 2020)
- Software Requirements Specification (Summer 2019)

INDUSTRY EXPERIENCE

6+ YEARS

Streams Tech Ltd.

- Senior Software Engineer January 2015 – September 2018
- Software Engineer March 2013 – December 2014

M&H Informatics (BD) Ltd.

- Software Engineer, part-time March 2012 - February 2013
- Intern Software Engineer July 2011 - December 2011

Projects

- **Time Series GPM** - process NASA's huge precipitation data to deliver as time series
- **SurfGIS** - a web-based GIS app for viewing, creating, managing, and sharing GIS data

ACTIVITIES AND ACHIEVEMENTS

- Received Alberta Graduate Excellence Scholarship
- Received University of Alberta Doctoral Recruitment Scholarship
- Student Volunteer for International Conference on Software Engineering (ICSE 2021)
- Former academic volunteer at Bangladesh Mathematical Olympiad (2008 - 2011)
- Co-directed Ramanujan Goni Songho, a local math club in Dhaka (2008 - 2012)
- Secured first place in an Inter-University Mathematical Olympiad (2009)
- Participated and won prizes at several national-level hackathons in Bangladesh (2011 - 2015)