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## RESEARCH INTEREST

Static Program Analysis, Automated Bug Repair, LLVM/MLIR Compilers

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## EDUCATION

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|---|--------------------------|----------------------------|
| <b>University of California, Riverside</b>  | <b>CA, USA</b>           | <b>Sep 2023 – Present</b>  |
| <ul style="list-style-type: none"><li>• Ph.D. in Computer Science   Advisor: Prof. Manu Sridharan</li><li>• M.Sc. in Computer Science, conferred Jun 2025</li></ul> |                          |                            |
| <b>Bangladesh University of Engineering and Technology (BUET)</b>   | <b>Dhaka, Bangladesh</b> | <b>Mar 2016 – Feb 2021</b> |
| <ul style="list-style-type: none"><li>• B.Sc. in Computer Science and Engineering   Thesis supervisor: Prof. Rifat Shahriyar</li></ul>                              |                          |                            |

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## PROFESSIONAL EXPERIENCE

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|---|---|----------------------------|
| <b>Compiler Developer Research Intern</b>   | <b>Nissan North America, Inc.   CA, USA</b> | <b>June 2025 - Present</b> |
| Building an MLIR-based compiler pipeline that maps BEVFusion-style perception models to accelerator hardware for Nissan's autonomous driving stack. Working closely with hardware architects to tune fusion and code-generation passes that maximize throughput on the target accelerator.  |   |                            |
| <b>Senior Software Engineer</b>   | <b>OpenRefractory, Inc.   CA, USA</b>       | <b>Feb 2021 – Aug 2023</b> |
| Developed Intelligent Code Repair (iCR) – an SAST tool that automatically detects and patches bugs in Java, Python, and Go. Implemented incremental pointer analysis algorithms with support for multithreading and framework-lifecycle semantics. Integrated deep learning models to broaden the coverage of bug detection. Created various custom checkers, including notable ones for taint analysis and null pointer detection. Restructured the architecture from monolithic to microservices for scalability. |   |                            |

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## RESEARCH EXPERIENCE

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|---|---------------------|----------------------------|
| <b>Graduate Research Assistant</b>  | <b>UC Riverside</b> | <b>Jul 2024 - Present</b>  |
| Researching automated repair of resource leak bugs in Java. Built Arodnap, a static-analysis pipeline that blends specification inference, lightweight code transformations, Resource Enclosurement Analysis for wrapper classes, and field-reassignment analysis for safe updates. In an open source benchmark of 285 projects, Arodnap increased the automated leak fix rate from 41% to 69%. |                     |                            |
| <b>Undergraduate Thesis</b>   | <b>BUET</b>         | <b>Mar 2020 - Jan 2021</b> |
| Developed RaceFixer, a Clang-based tool that automatically patches data races in multi-threaded C/C++ code. The system augments ThreadSanitizer reports with static analysis to craft fixes and inserts lock-reuse synchronization to resolve atomicity violations while avoiding deadlocks (arXiv:2401.04221).   |                     |                            |

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## PUBLICATIONS

- **Repairing Leaks in Resource Wrappers**, 2025 IEEE/ACM International Conference on Automated Software Engineering (ASE'25, Under review)  
Sanjay Malakar, Martin Kellogg, Michael D. Ernst, Manu Sridharan
- **Developer Discussion Topics on the Adoption and Barriers of Low-Code Software Development Platforms**, 2023 Empirical Software Engineering Journal (EMSE'23, Accepted)  
Md Abdullah Al Alamin, Gias Uddin, Sanjay Malakar, Sadia Afroz, Tameem Bin Haider, Anindya Iqbal [preprint]
- **An Empirical Study of Developer Discussions on Low-Code Software Development Challenges**, 2021 IEEE/ACM 18th International Conference on Mining Software Repositories (MSR'21, Accepted)  
Md Abdullah Al Alamin, Sanjay Malakar, Gias Uddin, Sadia Afroz, Tameem Bin Haider, Anindya Iqbal [preprint]

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## ACADEMIC AWARDS

- Awarded **Dean's Distinguished Fellowship** at the University of California, Riverside
- Received **Dean's Award** in Junior year from Bangladesh University of Engineering and Technology