463 WCH, UC Riverside
Riverside, CA 92521
www.sanjaymalakar.com

SANJAY MALAKAR

(+1) 951-544-8582
smala009@ucr.edu
github.com/iamsanjaymalakar

RESEARCH INTEREST

Software Engineering, Programming Languages, Static Analysis, Security and Reliability

EDUCATION

University of California, Riverside — **CA, USA** — **Sep 2023 – Present**
- Ph.D. in Computer Science | Advisor: Prof. Manu Sridharan

Bangladesh University of Engineering and Technology (BUET) — **Dhaka, Bangladesh** — **Mar 2016 – Feb 2021**
- B.Sc. in Computer Science and Engineering | Thesis supervisor: Prof. Rifat Shahriyar

RESEARCH EXPERIENCE

Graduate Research Assistant — **UC Riverside** — **Jul 2024 - Present**

Enhancing the Checker Framework's Resource Leak Checker by refining detection capabilities and applying code transformations to improve analysis and assist in repairing detected leaks. Identifying safe-to-fix resource leaks and leveraging LLMs for automated patch generation to streamline the repair process. Evaluating the approach on diverse open-source Java projects for robust validation.

Undergraduate Thesis — **BUET** — **Mar 2020 - Jan 2021**

Designed and implemented RaceFixer, a Clang-based tool to automatically fix data races in multi-threaded C/C++ applications. Leveraged ThreadSanitizer for detecting race conditions and enriched its bug reports with static analysis to generate suitable patches. Integrated synchronization mechanisms to resolve atomicity violations, emphasizing lock reuse and deadlock prevention.

PROFESSIONAL EXPERIENCE

Senior Software Engineer — **OpenRefactory, Inc. | CA, USA** — **Feb 2021 – Aug 2023**

Developed Intelligent Code Repair (iCR), a Static Application Security Testing (SAST) tool for automatically detecting and fixing bugs in Java, Python, and Go projects. Developed and implemented algorithms for pointer analysis, including incremental analysis support and enhancements for handling threading and framework life-cycle methods. Integrated deep learning models for bug detection and executed performance optimizations using ProtoBuf for efficient serialization. Developed various custom checkers, including notable ones for taint analysis and null pointer detection. Restructured the architecture from monolithic to microservices for scalability and established CI/CD workflows for streamlined testing and deployment.

PUBLICATIONS

- **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]

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

ACTIVITIES

- Attended SPLASH 2024 conference
- Exibited at Global DevSlam '22 in Dubai, UAE