# Sakib Fuad

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Actively pursuing internship roles in Graph Processing, Compiler Construction & Optimizations, and Program Analysis.

## Education

**University of California Riverside** — Riverside, USA
*PhD in Computer Science and Engineering, Supervisor: Dr. Zhijia Zhao* — *September, 2021 – Present*

**Bangladesh University of Engineering and Technology** — Dhaka, Bangladesh
*BSc in Computer Science and Engineering* — *February, 2015 – April, 2019*

## Work Experience

**Graduate Student Researcher** — Riverside, USA
*University of California, Riverside* — *September, 2021 - Present*

**Graduate Teaching Assistant** — Riverside, USA
*University of California, Riverside* — *September, 2022 - August, 2023*

- Courses: Compiler Construction, Project In Software Engineering

**Software Engineer** — Dhaka, Bangladesh
*OpenRefactory* — *Jun 2019- Jul 2021*

- Detected and pinpointed common programming errors in software codebases.
- Designed and implemented algorithms for auto-correction of identified errors
- Seamlessly integrated the code fixer tools into popular IDEs and continuous integration pipelines, providing developers with real-time feedback and corrections
- Led the packaging and distribution efforts, ensuring easy software installation, updates, and cross-platform compatibility.

## Research Experience

**Parallel CFL Reachability Analysis for High-Performance Program Analysis (Ongoing)**

- Developed a parallel, lock-free algorithm for edge-centric, worklist-based CFL reachability analysis
- Implemented graph partitioning and new data structures to eliminate synchronization issues
- Achieved significant performance improvements over state-of-the-art systems.

**Dual-Model Graph System for CFL Reachability Analysis (Under Review)**

- Explored vertex-centric and edge-centric models for CFL reachability.
- Developed model-specific optimization techniques.
- Achieved significant performance gains over state-of-the-art systems.

**A Faster Algorithm to Find All-Pairs Shortest Paths (Undergraduate Thesis)**

- Worked on enhancing the performance of the classical APSP algorithm.

## Publications

- Brian Chen, Nafis Mustakin, Alvin Hoang, **Sakib Fuad**, and Daniel Wong. 2023. ***VSCuda: LLM based CUDA extension for Visual Studio Code***. In Proceedings of the SC '23 Workshops of The International Conference on High Performance Computing, Network, Storage, and Analysis (SC-W '23). Association for Computing Machinery, New York, NY, USA, 11–17. https://doi.org/10.1145/3624062.3624064

## Projects

**Graph Generator for CFL-Reachability Analysis** | LLVM, C++ — 2023

- Developed an LLVM module to generate Program Expression Graphs (PEG), and Sparse Value Flow Graphs (SVFG) from C/C++ code.

**Wiki Search Engine for Texts and Images** | Lucene, Java, Hadoop, MongoDB 2022

- Developed a search engine to enhance document retrieval across 3GB of crawled Wikipedia data
- Used Lucene for indexing and MapReduce document ranking

**Prediction-based Analysis of StackOverflow data** | Python, Scala, JavaScript, Spark 2021

- Utilized SparkSQL to filter and query StackOverflow's XML data, identifying key trends, skills, and their geographical distribution.
- Successfully implemented a response time prediction model for StackOverflow posts, based on the approach proposed by Vasudev et. al.
- Conducted in-depth analysis to recognize clusters of correlated tags, further enhancing the platform's tag system.

**DMC Dreamers** | Android, PostgreSQL, Firebase, REST APIs 2018

- Co-developed "DMC Dreamers," an Android application
- Designed for medical admission test preparation in Bangladesh
- Facilitated both free and premium MCQ exam features to cater to a broad user base.

## Skills

**Languages:**: C, C++, Java , Python, JavaScript
**Frameworks**: nodeJs, ReactJs, Django, Android
**Application tools**: Docker, Maven, Git
**Database**: MongoDB, PostgreSQL, MySQL, Cassandra
**Cloud Platform:** AWS, Azure

## Academic Honors

Graduate Student Fellowship, UCR, USA 2021
Higher Secondary Certificate Scholarship, Bangladesh 2014
Secondary School Certificate Scholarship, Bangladesh 2012

## Extracurricular Activities & Achievements

- Organized BUET CSE FEST 2019, encompassing a Hackathon, Inter-University Programming Contest, and various computer science-related events.
- 1st Runner-up in Inter-College Science Project Show, Rajuk Uttara Model College, Dhaka (2013).