Kanak Das

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RESEARCH INTEREST

Programming Languages, Software Engineering, Software Security

EDUCATION

University of California, Riverside *Sep 2022 - Current*

PhD in Computer Science

- *CGPA*: 3.94 on a scale of 4
- *Advisor*: Manu Sridharan

Bangladesh University of Engineering and Technology *Feb 2015 - April 2019*

Bachelor of Science in *Computer Science and Engineering*

- *CGPA*: 3.31 on a scale of 4.0
- *Advisor*: Md. Shohrab Hossain

RESEARCH EXPERIENCE

University of California, Riverside *Sep 2022 – Current*

Graduate Research Assistant

Working on a pluggable type system based taint checker for Java programs. We've been building this on top of a barebone subtyping checker for taint analysis, experimenting with a bunch of ideas, with the goal to come up with a practical usable checker for real-world systems.

Bangladesh University of Engineering and Technology *Nov 2019 – May 2020*

Research Assistant (part-time)

Contributed to a project titled *Diving deep into the Security Testing of the Android Applications of Bangladesh*, granted by Bangladesh ICT Innovation Fund. Supervised by Md. Shohrab Hossain.

Bangladesh University of Engineering and Technology *June 2018 – April 2019*

Built *AndroCap***,** an Android Inter Component Communication(ICC) based Collusive Malware Analysis and Visualization Tool to demonstrate possible malicious ICC paths. The visualization service was fed the malicious ICC call graphs from IC3-Dialdroid and dynamic ICC information captured by app instrumentation.

PROFESSIONAL EXPERIENCE

OpenRefactory, Inc. | Santa Clara, CA, USA | Remote *June 2019 – July 2022*

Lead Software Engineer *(Jan 2022-July 2022)*

Software Engineer *(June 2019-Dec 2022)*

Worked on developing static analysis tools to detect and fix common programming errors that result in software failures.

Responsibilities included,

- writing checkers for Java,
- investigating and integrating new technologies, platforms, and SDKs,
- packaging products on different platforms.

Some of the major contributions included,

- case study of Java serialization in the core codebase and the introduction of alternative serialization which subsequently resulted in significant performance improvement,
- bootstrapping the initial codebase and testing framework for Python and Typescript checkers,
- conversion of the heavy parts in the core codebase to native code that resulted in improved performance,
- design and implementation of licensing schemes for products on different platforms.

TEACHING EXPERIENCE

University of California, Riverside
Teaching Assistant *Fall 2023*
Principles of Programming Languages
Teaching Assistant *Winter 2024*
Advanced Software Testing and Analysis

TECHNICAL EXPERIENCE

Programming: Java, Python, C, JavaScript, TypeScript, OCaml, Assembly, Shell
Techs: Eclipse JDT, IntelliJ Platform SDK, Checker Framework, Git, Docker, Gradle, Maven, Android, Node.js, Django

PUBLICATIONS

Ajoy Das, Kanak Das, and Md. Shohrab Hossain. An Integrated Inspection and Visualization Tool for Accurate Android Collusive Malware Detection. *7th International Conference on Networking, Systems and Security (7th NSysS 2020)*, Dhaka, Bangladesh, December 2020.

OPEN SOURCE CONTRIBUTION

- ***Checker Framework***

  Fixed a bug that prevented support for annotation inference on var assignments. (PR)

  Added documentation on using checker with source code mixed with Lombok generated code. (PR)

PERSONAL PROJECTS

- ***Bakademia***

  Inspired by UrbanDictionary, we attempted a crowdsourcing-based Bengali word explanation platform. Worked on database schema design and REST API implementation.

- ***DMC Dreamers*** (PlayStore)

  Contributed to a software system which focuses on aiding medical admission test preparation in Bangladesh.

  Worked on designing and implementing REST APIs, payment gateway integration, and live exam subsystem.

- ***Tetris*** (GitHub) Built a Tetris game in assembly 8086.

- ***Discount Hub*** (GitHub)

  A crawler based web-app to gather and compare discounts on popular Bangladeshi shopping websites.

- ***Let's save a tree*** (Youtube)

  A plant watering system. Interfaced a soil moisture sensor and developed a DC motor-based custom watering system, all controlled by an ATMega32 microcontroller.

HONORS AND AWARDS

Dean's Distinguished Fellowship | University of California, Riverside
2022
Bangladesh Chemistry Olympiad, 2014| Dhaka, Bangladesh
National Champion
Bangladesh Education Board Scholarship
2006, 2009, 2012, 2014