

# Kanak Das

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## RESEARCH INTEREST

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Programming Languages, Software Engineering, Software Security

## EDUCATION

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### University of California, Riverside

Sep 2022 - Current

*PhD in Computer Science*

- CGPA: 3.91 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
- Advisor: Md. Shohrab Hossain

## RESEARCH EXPERIENCE

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### 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

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### OpenRefactory, Inc. | Santa Clara, CA, USA | Remote

June 2019 – Aug 2022

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

*Software Engineer (June 2019 - Dec 2021)*

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

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### University of California, Riverside

*Teaching Assistant*

Principles of Programming Languages

Advanced Software Testing and Analysis

Fall 2023

Winter 2024

## TECHNICAL EXPERIENCE

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**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

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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

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- **Checker Framework**

Added support for annotation inference on var assignments. ([PR](#))

Added notes on using checker with source code mixed with Lombok generated code. ([PR](#))

## PERSONAL PROJECTS

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- **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

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**Outstanding Teaching Assistant Award | University of California, Riverside**

2024

**Dean's Distinguished Fellowship | University of California, Riverside**

2022

**Bangladesh Chemistry Olympiad**

*National Champion 2014*

**Bangladesh Education Board Scholarship**

2006, 2009, 2012, 2014