Kia Rahmani

PHD CANDIDATE

✉ rahmank@purdue.edu | 🏠 kiarahmani.github.io | ⌂ Kiarahmani | 🐦 @MDDBACA

Education

Purdue University   *West Lafayette , IN*

PHD IN COMPUTER SCIENCE   *2015-2021 (expected)*

- **Advisors**: Dr. Suresh Jagannathan and Dr. Benjamin Delaware
- **Thesis Topic**: Verified compilation and synthesis of weak consistency tolerant database applications
- **Courses**: Computer-aided Program Reasoning, Programming Languages, Operating Systems, Information Security, Formal Methods In Databases, Parallel Computing, Algorithm Design and Implementation, Distributed Database Systems

Sharif University of Technology   *Tehran, Iran*

BACHELOR OF SCIENCE IN COMPUTER SCIENCE   *2010-2015*

- **Thesis**: Three-Ballot Voting System: Design Principles and Attacks

Publications

OOPSLA'19: CLOTHO: Directed Test Generation for Weakly Consistent Database Systems

- Kia Rahmani, Kartik Nagar, Benjamin Delaware and Suresh Jagannthan

PaPoC'18: Fine-grained distributed consistency guarantees with effect orchestration

- Kia Rahmani, Gowtham Kaki and Suresh Jagannthan

Skills

Programming: Java, C, Haskell, System/Network Coding

Database: Cassandra, Apache Ignite, CockroachDB, PostgreSQL, MySQL

Misc: Git, AWS, Coq, Jepsen, LaTeX

Projects

Automated Concurrency Bug Repair via Database Schema Refactoring   *2019-present*

- In this ongoing project, we are investigating the possibility of eliminating concurrency bugs in applications of weakly-consistent storage systems, through a series of schema refactoring steps, guided by the set of abstract anomalies which are statically found in the program

Directed Test Generation for Weakly Consistent Databases   *2017-2019*

- We designed a novel and fully automated testing framework for detecting serializability violations in (SQL) database-backed Java applications executing on weakly-consistent storage systems. Our approach combines a static analyzer and a model checker to generate abstract executions, discover serializability violations in these executions, and translate them back into concrete test inputs suitable for deployment in a test environment

Fine-grained distributed consistency guarantees with effect orchestration   *2016-2017*

- In this project, I leveraged declarative axiomatic specifications of necessary constraints that any correct implementation of weakly consistent data stores must satisfy, to guide a light-weight run-time consistency enforcement tool written in Haskell

Coq implementation of Quelea   *2015-2016*

- I formalized and implemented the operational semantics introduced in PLDI'15 paper, *Declarative Programming over Eventually Consistent Data Stores*, in the Coq proof assistant (source available)

Teaching Experience

Purdue University	Teaching Assistant: Principles and Practices of Compilers (2018), Programming Languages (2019)
Sharif University	Teaching Assistant: Mathematical Logic (2014)
Helli High School	Teacher: C programming Course (2010-2013)

References

Suresh Jagannathan   Professor, Department of Computer Science, Purdue University
Phone: 765-494-0971 - Email: suresh@cs.purdue.edu

Benjamin Delaware   Assistant Professor, Department of Computer Science, Purdue University
Email: bendy@purdue.edu