

Ameer Hamza

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A PhD Computer Science student with 5+ years of programming experience and research interests in Formal Methods, Software Verification and Program Analysis

TECHNICAL SKILLS

Languages: C/C++, Java, Python, C#, Golang, Haskell, JavaScript, Unix System Programming

Tools: SeaHorn Verification Framework, LLVM Compiler, Java PathFinder (JPF), Z3 (SMT solver), Git/GitHub

WORK EXPERIENCE

Graduate Research Assistant

Florida State University

Formal Methods Group | Software Verification, Formal Methods

May 2020 – Present

- Project: Automated Alignment for Equivalence Checking

Serene Lab | Software Engineering, Performance Evaluation

June 2019 – April 2020

- Project: Performance of Language Features

Graduate Teaching Assistant

Florida State University

Software Engineering Course (CEN4020) | Software Practices, Developer Tools, Testing

Fall 2019 & Spring 2021

- Taught recitation classes; assisted students with assignments/projects and course content; graded instruments

Technical Author

Educative Inc.

Data Structures and Algorithms Interactive Course | Python, JavaScript, Teaching Community

June 2017 – May 2018

- Developed a course for students learning problem solving using data structures and algorithms in Python and JS

Teaching Assistant

Lahore University of Management Sciences

Operating Systems Course (CS370) | Systems, Unix Architecture

Fall 2017

- Assisted students with programming assignments and course content; graded course instruments

PUBLICATIONS

A. Hamza and G. Fedyukovich, “Automated Alignment for Equivalence Checking,” in Computer-Aided Verification, 2021

Under Review

PROJECTS

Automated Alignment for Equivalence Checking | C/C++, Z3, Symbolic Execution

May 2020 – Present

- Reducing a task of equivalence checking (relational verification) to a task of safety checking of a product program
- Introducing a novel technique for equivalence checking of two programs containing loops that require a nontrivial alignment (not in lockstep composition) inside product program

Automatic Assertion Generation | C/C++, Dynamic & Static Analysis

November 2019 – December 2019

- Designed an automatic way of generating assertions for programs using program trace data and used CBMC to prove/disprove these assertions on a range of benchmarks from SV-COMP (Collection of Verification Tasks)

Model Checking of Java Programs | Java, Concurrent Programs, Error Detection

January 2017 – May 2017

- Worked with Java PathFinder (JPF) for Model Checking and Partial Order Reduction of concurrent Java programs to detect data races

Modifying jEdit | Java, Open-Source Systems, Collaboration

March 2019 – May 2019

- Made required changes (addition, deletion and modification of functionality) in an open-source system - jEdit, while working together with a team to ensure the correctness of the system all the time

Peer-to-Peer File Storage System | Golang, File Systems, Chord DHT, Teamwork

August 2017 – May 2018

- Built a distributed P2P file storage system that serves as a backup for user's data, ensuring Fault Tolerance and Load Balancing

EDUCATION

Florida State University (FSU)

Tallahassee, FL

PhD in Computer Science | GPA: 3.82/4.00

August 2018 – May 2024

Relevant Coursework: Graduate Software Engineering, Computer-Aided Verification, Advanced Algorithms

Lahore University of Management Sciences (LUMS)

Lahore, PK

BS in Computer Science | GPA: 3.06/4.00

August 2014 – May 2018

Relevant Coursework: Software Engineering, Program Analysis, Algorithms, Data Structures, Computer Security