CSDS 500 Spring 2022 Colloquium

11:30 AM to 12:30 PM
Tuesday, February 15, 2022
Virtual

Zoom Webinar ID: 924 6942 2087
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Synthesizing Verified Adapters for Object-Oriented Programs

Abstract: Software libraries play a critical role in the software development process. They expose APIs that provide useful functionality and create abstractions that enable developers to focus on the core application logic, leading to modular software development. Several factors influence optimal library utilization – (a) awareness of the most appropriate libraries, (b) the ability to reason about a library across various dimensions that include correctness, security, performance, and memory usage, and (c) the ease of incorporating a library to serve the functional requirements of the application.

In this talk, I present our recent work on searching for replacement classes and automatically synthesizing verified adapters. These adapters are drop-in replacements as they exhibit equivalent program behavior under all contexts. Our experiments demonstrate that the approach can identify suitable replacement classes from a corpus of 600K Java classes and synthesize non-trivial verified adapters.

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Bio: Malavika Samak is a Postdoctoral Associate at CSAIL, MIT, advised by Prof. Martin Rinard. Her goal is to design approaches to discover, reason, customize, and adapt code to build defect-free software systems efficiently. Her research interests are in static and dynamic program analysis, program synthesis, and verification. She designed techniques for synthesizing multithreaded tests for detecting concurrency bugs as part of her doctoral dissertation. She holds a Ph.D. in Computer Science from the Indian Institute of Science (IISc), Bangalore, and is a recipient of a Google Ph.D. fellowship.

This is to certify that _____attended this seminar. Certified by _____.
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