

Eliminating bugs in real systems

Host: Holly Rushmeier



Monday April 5, 2021
4:00 p.m.
Speaker: Fraser Brown
Zoom Presentation

Abstract:

Software is everywhere, and almost everywhere, software is broken. Some bugs just crash your printer; others hand an identity thief your bank account number; still others let nation-states spy on dissidents and persecute minorities.

This talk outlines my work preventing bugs using a blend of programming languages techniques and systems design. First, I'll talk about securing massive, security-critical codebases without clean slate rewrites. This means rooting out hard-to-find bugs—as in Sys, which scales symbolic execution to find exploitable bugs in systems like the twenty-million line Chrome browser. It also means proving correctness of especially vulnerable pieces of code—as in VeRA, which automatically verifies part of the Firefox JavaScript engine. Finally, I'll discuss work on stronger foundations for new systems—as in CirC, a recent project unifying compiler infrastructure for program verification, cryptographic proofs, optimization problems, and more.

Bio:

Fraser Brown is a PhD student at Stanford advised by Dawson Engler, occasional visiting student at UCSD with Deian Stefan, and NSF graduate research fellowship recipient. She works at the intersection of programming languages, systems, and security, and her research has been used by several companies. She holds an undergraduate degree in English from Stanford.