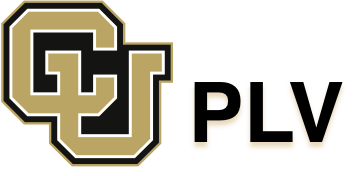
Be inspired.

Programming Languages and Verification Seminar

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Petablox: Declarative Program Analysis for Big Code

Mayur Naik  
Georgia Tech

DLC 1B70

Friday, May 29, 2015

10:30 a.m. to 11:30 a.m.

Most software development today leverages the world's massive collection of open source software. There is significant room for program analyses to similarly leverage Big Code, the collective knowledge amassed from analyzing existing programs, to automatically infer or predict salient behaviors and vulnerabilities in new programs. We present Petablox, a framework for automatically synthesizing use-cases of arbitrary declarative program analyses for Big Code tasks such as efficiently finding good abstractions, transferring analysis results across programs, and adapting analyses to user feedback. Despite their diversity, all these tasks entail solving large instances of MaxSAT, the maximum satisfiability problem which comprises a mix of hard (inviolable, logical) constraints and soft (violable, probabilistic) constraints. We describe demand-driven, compositional, and learning-based MaxSAT optimizations in Petablox for scaling these tasks to large code bases.

**Mayur Naik** is an Assistant Professor in Computer Science at Georgia Tech since 2011. His research interests are in programming languages and software engineering, with a current emphasis on program analysis techniques and systems for improving software quality and programmer productivity on modern computing platforms such as parallel, mobile, and cloud computing. He holds a Ph.D. in Computer Science from Stanford University (2007) and was a research scientist at Intel Labs, Berkeley from 2008 to 2011.

**Hosted** by Bor-Yuh Evan Chang



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