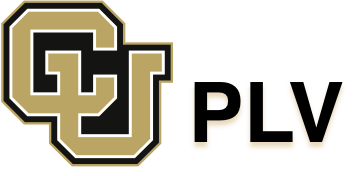
Be inspired.

Programming Languages and Verification Seminar

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Programming Network Policies Using High-Level Abstractions

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Yifei Yuan

PhD Candidate, University of Pennsylvania

ECOT 831

Friday, April 22, 2016

12:00-1:00 PM

In recent years, we have seen revolutionary innovations in computer networks, such as Software-Defined Networking (SDN) and Network Functionality Virtualization (NFV). As a result, programmable devices and network programmability are emerging rapidly in computer networks and network management. While this new wave of innovations promises fast provisioning of network services and high flexibility in network management, however, it poses a new demand to network operators on programming network policies.

In this talk, I will present two domain-specific high-level programming abstractions designed for network operators in order to simplify the programming of network policies and improve the network operators'productivity. First, I will introduce NetEgg, a scenario-based programming tool that allows network operators to program SDN policies using example behaviors of the desired policy. As demonstrated in our user study, NetEgg was able to reduce programming time considerably. Second, I will describe NetQRE, a declarative language for programming quantitative network policies which involve monitoring network/application-level performance and responding to the monitoring results in real time. I am going to illustrate how NetQRE significantly simplifies the programming of quantitative network policies and also automatically generates efficient implementations.

Yifei Yuan is a PhD candidate in the Computer and Information Science Department at the University of Pennsylvania. He received his bachelor's degree in Computer Science from Tsinghua University in 2010. His research interests lie in formal methods and networked systems. He focuses his dissertation on designing high-level programming abstractions that simplify programming network policies with better reliability.

**Hosted** by Pavol Cerny.

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