

The Next 700 Network Programming Languages

Nate Foster - Cornell University

Specification and verification of computer networks has become a reality in recent years, with the emergence of domain-specific programming languages and automated verification tools. But the design of these languages and tools has been largely ad hoc, driven more by the needs of applications and the capabilities of hardware than by any foundational principles. This talk will present NetKAT, a language for programming networks based on a well-studied mathematical foundation, Kleene Algebra with Tests (KAT). The talk will describe the design of the language, its semantic underpinnings, and extensions with features to support stateful and probabilistic programming.

NetKAT is joint work with colleagues at Cornell, Facebook, Inhabited Type, Princeton, Samsung, UCL, and UMass Amherst.

Biography: Nate Foster is an Assistant Professor of Computer Science at Cornell University. The goal of his search is developing programming languages and tools for building reliable systems. He received a PhD in Computer Science from the University of Pennsylvania in 2009, an MPhil in History and Philosophy of Science from Cambridge University in 2008, and a BA in Computer Science from Williams College in 2001. His awards include a Sloan Research Fellowship, an NSF CAREER Award, a Most Influential POPL Paper Award, a Tien '72 Teaching Award, a Google Research Award, a Yahoo! Academic Career Enhancement Award, and the Morris and Dorothy Rubinoff Award.