

Liquid Haskell: Theorem Proving for All

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Resumen:

Formal verification has been gaining the attention and resources of both the academic and the industrial world since it prevents critical software bugs. Yet, software development and formal verification are usually decoupled. Haskell is a unique programming language in that it is a general purpose, a functional language used for industrial development, but simultaneously it stands at the leading edge of research and teaching welcoming new, experimental, yet useful features. This talk presents Liquid Haskell, a refinement type checker in which formal specifications are expressed as a combination of Haskell's types and expressions and are automatically checked against real Haskell code. This natural integration of specifications in the language, combined with automatic checking, established Liquid Haskell as a usable verifier, enthusiastically accepted by both industrial and academic Haskell users. Recently, Liquid Haskell has been turned into a theorem prover, in which arbitrary theorems about Haskell functions would be proved within the language. As a consequence, Liquid Haskell can be used to prove theorems about Haskell functions by all Haskell programmers.

Sobre Niki Vazou:

Niki Vazou is an Assistant Professor at IMDEA. She started her computer science education in NTUA, Athens, Greece. She got her Ph.D. from UCSD, San Diego where she developed Liquid Haskell, a type-based, semi-automated verifier for Haskell programs. After that, she spend some time as a postdoctoral fellow at University of Maryland. Her research interests include refinement types, automated program verification, and type systems and her goal is to make theorem proving a useful part of mainstream programming.