

Kenneth Knowles

Curriculum Vitae

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Education

2013 – 2014 **Ph.D.**, *University of California, Santa Cruz.*

2004 – 2008 **M.S.**, *University of California, Santa Cruz.*

1999 – 2004 **B.S.**, *University of California, Berkeley.*

Doctoral Dissertation

title *Executable Refinement Types*

supervisor Cormac Flanagan

readers Luca de Alfaro
Ranjit Jhala

Refereed Publications

Faceted information flow in haskell via control and data monads. Thomas Schmitz, Dustin Rhodes, Cormac Flanagan, Thomas Austin, and Kenneth Knowles. In *Proceedings of the 5th international conference on the Principles of Secrecy and Trust*, POST '16, pages 3–23. Springer-Verlag, 2016.

Hybrid type checking. Kenneth Knowles and Cormac Flanagan. *ACM Transactions on Programming Languages and Systems*, 32(2):6:1–6:34, February 2010.

Compositional reasoning and decidable checking for dependent contract types. Kenneth Knowles and Cormac Flanagan. In *Proceedings of the 3rd workshop on Programming languages meets program verification*, PLPV '09, pages 27–38, New York, NY, USA, 2009. ACM.

Proving Correctness of a Dynamic Atomicity Analysis in Coq. Caitlin Sadowski, Jaeheon Yi, Kenneth Knowles, and Cormac Flanagan. In *3rd Informal Workshop on Mechanizing Metatheory*, WMM '08, Victoria, BC, Canada, 2008.

Type reconstruction for general refinement types. Kenneth Knowles and Cormac Flanagan. In *Proceedings of the 16th European conference on Programming*, ESOP '07, pages 505–519, Braga, Portugal, 2007. Springer-Verlag.

Sage: Hybrid Checking for Flexible Specifications. Jessica Gronski, Kenneth Knowles, Aaron Tomb, Stephen N. Freund, and Cormac Flanagan. In *Proceedings of the 7th workshop on Scheme and functional programming*, Scheme '06, Portland, OR, USA, 2006. ACM.

Trade Press

First Order Logic A La Carte. Kenneth Knowles. In *The Monad Reader, issue 11*. 2008.

Research Experience

2004 - 2009 **Graduate Student Researcher**, *University of California, Santa Cruz.*

Teaching Experience

Winter 2005 **Graduate Student Instructor (Compiler Design)**, *University of California, Santa Cruz.*

Additional Training

2008 Summer School on Logic and Theorem Proving, *University of Oregon*

2007 Summer School on Language-Based Techniques for Integrating with the External World, *University of Oregon*

2006 Summer School on Language-Based Techniques for Concurrent and Distributed Systems, *University of Oregon*

Service

2016 **Reviewer**, *ACM Transactions of Programming Languages and Systems (TOPLAS).*

2015 **Reviewer**, *ACM Transactions of Programming Languages and Systems (TOPLAS).*

2014 **Reviewer**, *International Conference on Concurrency Theory (CONCUR).*

2008 **Reviewer**, *ACM SIGACT-SIGPLAN Symposium on Principles of Programming Languages (POPL).*

2008 **Reviewer**, *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI).*

Awards

2012 **Best Analysis**, *Hubway Data Visualization Challenge.*

With Kim Ducharme, Verena Tiefenbeck, and Zia Sobhani.

Fall 2008 **Regents Fellowship**, *University of California, Santa Cruz.*

Spring 2007 **Regents Fellowship**, *University of California, Santa Cruz.*

Winter 2007 **Regents Fellowship**, *University of California, Santa Cruz.*

Fall 2004 **Regents Fellowship**, *University of California, Santa Cruz.*

1999 – 2004 **National Merit Scholar**, *University of California, Berkeley.*

1999 **Radioshack/Tandy Scholar**, *San Ramon Valley High School.*

Awarded to top mathematics student in graduating class.

Patents

Systems and methods for determining and facilitating content updates for a user device. Robert Cromwell, Rober Benjamin Scott, Aaron Haney, Kenneth Lorenz Knowles, Nolan Shea Myers, Arther Kopatsy, Joshua John Forman. US Patent #8370341. 2012.

Invited Talks

2010 **The Curry-Howard Isomorphism**, *University of California, Santa Cruz.*

2007 **Hybrid Type Checking**, *Williams College*.

Non-Academic Professional Experience

2014 – **Software Engineer**, *Google*.

2014 **Lead Engineer and Director of Software Development**, *ArborBridge*.

Responsible for software development outcomes, from strategy to execution and subsequent analysis. Leading a hand-picked team of three senior engineers as well as overseeing engagements with usability analysts, designers, overseas resources, etc. ArborBridge delivers personalized educational services using proprietary curricula developed according to advances in technology, pedagogy, and neuroscience.

2013 **Senior Engineer**, *Dimagi*.

Led development of backend data export and transformation tools. In addition, contributed broadly to CommCare, a suite of cloud and mobile technology supporting diverse efforts to deliver basic food, health, and education to underserved communities worldwide.

2010 – 2012 **Platform Engineer**, *Inkling*.

Directed the analytics team, including business analysts, designers, front-end and back-end developers. In addition, played an instrumental role in the development of Inkling's platform for premium interactive learning content, including their REST API, devops pipeline, publishing tools, web store, and search capabilities.

2009 – 2010 **iPhone Application Engineer**, *Sugarcube*.

Developed iPhone apps for Fortune 500 brands such, including Gap, Timberline, Target and Cooks Illustrated. Our apps were regularly featured in Apple commercials and stores.

2000 – 2004 **Senior Programmer**, *Cityspan*.

Led the development team building Cityspan's principle product, Youthservices.net, an information management system now used by over 100 large not-for-profit clients such as the Chicago Public Schools. Conceived and created a language for nontechnical personnel to customize the product, an early AJAX-accelerated user interface, and a query and reporting system.