

# Christopher D. Richards

<http://mauka.net/cdrichards/>

## Education

Princeton University, Princeton, NJ  
Ph.D. in Computer Science, June 2010  
Dissertation Title: *The Approximation Modality in Models of Higher-Order Types*  
Advisor: Andrew W. Appel

Williams College, Williamstown, MA  
B.A. *cum laude* in Computer Science, May 2000, GPA: 3.71

## Experience

Princeton University  
*Doctoral Candidate* 2006–2010  
Developed system to encode safety invariants for machine code programs using principles from mathematical logic.

*Research Assistant* 2000–2005  
Developed Foundational Proof-Carrying Code for certifying safety of machine-code programs. Maintained 140,000-line code base (Twelf—logic programming and theorem proving) and developed supporting tools (Awk). Proved theorems in machine-checked formal logic. Improved type systems for machine code.

Plaintiffs in *Gusciora v. Corzine* (N.J. Super. Ct. Law Div.) Summer 2008  
*Expert Study Group Member* (pro bono)  
Analyzed security and accuracy of Sequoia AVC Advantage voting machine with plaintiff's expert witness. Audited source code (C, Z80 assembly) and crafted exploits.

AT&T Labs—Research Summer 2000  
*Summer Manager* Advisor: Richard W. Sproat  
Upgraded the *lertools* software package for language analysis, with emphasis on modularity and maintainability.

## Selected Publications

*Semantic Foundations for Typed Assembly Languages*. Amal Ahmed, Andrew W. Appel, Christopher D. Richards, Gang Tan, and Daniel C. Wang. *ACM Transactions on Programming Languages and Systems (TOPLAS)*, 32(3):1–67, March 2010.

*A Very Modal Model of a Modern, Major, General Type System*. Andrew W. Appel, Paul-André Melliès, Christopher D. Richards, and Jérôme Vouillon. In *POPL '07: Proceedings of the 34th Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, January 2007.

## Skills

*Languages*. ML, Java, C, Python, Unix shell, Awk, Lisp, Twelf, Coq, LaTeX  
*Systems*. Linux/BSD/Solaris, Mac OS X, Windows

## References

Available upon request.