Kenny Foner

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Location:	**Philadelphia, PA**	*Pronouns*:	**they/them/their**

★ Who am I?

I'm a **functional programmer** and a **programming languages researcher**—I delight in building practical tools from meaningful theory to make a positive difference for programmers and for the world.

- ✪ I love making compilers, type systems, testing tools, domain-specific languages, static analyses…
- ✪ I enjoy programming in Haskell, Rust, OCaml, Coq, Clojure, Elisp, Dafny, Cryptol, Racket…
- ✪ As a PL researcher, my formal background and broad experience give me the perspective to quickly become proficient in new languages and paradigms—and I'm excited by opportunities to do so!

★ Education

University of Pennsylvania *(Philadelphia, PA)* May 2018

Master of Science in Engineering in Computer and Information Science
Advised by Dr. Stephanie C. Weirich

Brandeis University *(Waltham, MA)* May 2015

Bachelor of Science in Computer Science *summa cum laude* with highest departmental honors
Thesis: *Getting a Quick Fix on Comonads*, advised by Dr. Harry G. Mairson

★ Experience

Galois *(Arlington, VA/Remote)* 2018 – present
Software Engineer/Researcher

Work on multiple projects: collaborating directly with clients to implement a custom typed scripting language for high-assurance distributed scripting; contributing new API functionality to the SAW/Cryptol suite of open-source program analysis tools; developing verification tooling for high-assurance election technology.

Microsoft Research *(Redmond, WA)* Summer 2016
Research Intern

Formalized the metatheory of several programming languages as a stress test for the experimental Dafny language/proof-assistant. Designed an intermediate language to succinctly verify a multi-part compilation pipeline. Contributed to Dafny's development, implementing bug fixes and feature improvements.

Galois *(Portland, OR)* Summer 2015
Research Intern

Designed and implemented a semi-interactive heuristic code generation tool which presents a user-friendly interface to the construction and evaluation of formal program equivalence proofs. In a separate project, designed a prototype for a new streaming graph query language.

Galois *(Portland, OR)* Summer 2014
Research Intern

Created embedded domain-specific languages for describing secure distributed computations. Developed an optimizing compiler for a language expressing oblivious secret-sharing protocols, and an efficient bytecode interpreter which was several times faster than the previous best results on a series of established benchmarks.

MIT Lincoln Laboratory *(Lexington, MA)* Summer 2013
Research Intern

Prototyped applications and protocols to evaluate experimental frameworks for dynamic information flow control (IFC). Within this framework, developed a secure-by-construction distributed multi-player game as an example application. Contributed to a comparative analysis of IFC frameworks, published in PLAS '14.

★ Publications

ICFP 2018: "Keep Your Laziness in Check." K. Foner, H. Zhang, and L. Lampropoulos. In *Proceedings of the 2018 ACM SIGPLAN International Conference on Functional Programming*.

ICFP 2018: "What's the Difference? A Functional Pearl on Subtracting Bijections." B. Yorgey and K. Foner. In *Proceedings of the 2018 ACM SIGPLAN International Conference on Functional Programming*.

Haskell 2017: "Ode on a Random Urn (Functional Pearl)." L. Lampropoulos, A. Spector-Zabusky, and K. Foner. In *Proceedings of the 2017 ACM SIGPLAN Symposium on Haskell*.

TyDe 2016: "Choose Your Own Derivative (Extended Abstract)." J. Paykin, A. Spector-Zabusky, and K. Foner. In *Proceedings of the 2016 ACM SIGPLAN Workshop on Type-Driven Development*.

Haskell 2015: "Functional Pearl: Getting a Quick Fix on Comonads." K. Foner. In *Proceedings of the 2015 ACM SIGPLAN Symposium on Haskell*.

PLAS 2014: "You Sank My Battleship!: A Case Study in Secure Programming." A. Stoughton, A. Johnson, S. Beller, K. Chadha, D. Chen, K. Foner, and M. Zhivich. In *Proceedings of the 2014 ACM Workshop on Programming Languages and Analysis for Security*.

★ Teaching

Teaching Assistant for *CIS 552: Advanced Programming* (Haskell) Spring 2017
University of Pennsylvania *(Philadelphia, PA)*

Teaching Assistant for *CIS 500: Software Foundations* (Coq) Fall 2016
University of Pennsylvania *(Philadelphia, PA)*

Course Instructor for *COSI 98: Introduction to Programming* (Haskell) Spring 2015
Brandeis University *(Waltham, MA)*

Teaching Assistant for *COSI 21b: Structure & Interpretation of Computer Programs* (Scheme) Spring 2013, 2014
Brandeis University *(Waltham, MA)*

★ Presentations

ICFP 2018: "Keep Your Laziness in Check."

C○mp○se NYC 2017: "Choose Your Own Derivative."

C○mp○se NYC 2016: "*There and Back Again* and What Happened After."

Haskell Symposium 2015: "Functional Pearl: Getting a Quick Fix on Comonads."

★ Aesthetic

Cats, clarinet, capsaicin, autumn in Massachusetts, half-tone dissonance, wool socks, dodecahedra, incandescent lights, fluffy little sparrows, purple (#62488F), sourdough bread, train travel, postrock, partly cloudy and 68°F (20°C), stained glass, biking fast, potted succulents, em-dashes (—), the moon, smooth peanut butter, and cats.