John Li

li.john@northeastern.edu
https://john-ml.github.io/

EDUCATION	**Northeastern University**, Boston, Massachusetts, USA	
	Ph.D. Computer Science	Sep 2021 – Now
	Princeton University, Princeton, New Jersey, USA	
	M.S.E. Computer Science	Sep 2019 – May 2021
	• Cumulative GPA: 4.0 / 4.0	
	A.B. Neuroscience, High Honors	Sep 2015 – May 2019
	• Minor in Computer Science	
	• Cumulative GPA: 3.86 / 4.0	

RESEARCH EXPERIENCE

Northeastern University   Sep 2021 – Now

- Advisors: Amal Ahmed and Steven Holtzen
- Working on a logic for reasoning about feature-rich probabilistic programming languages.

Sandia National Laboratories   Jun 2021 – Aug 2021

- Supervisors: Jon Aytac and Philip Johnson-Freyd
- Constructed category-theoretic models of a higher-order separation logic for reasoning about probabilistic programs.

Microsoft Research   Jun 2021 – Aug 2021

- Supervisors: Tahina Ramananandro and Nikhil Swamy
- Built a model of C structs and unions in F* and used it to validate rules for reasoning about struct-and-union-manipulating C programs in the concurrent separation logic Steel.

Princeton University   Sep 2019 – May 2021

- Advisor: Andrew Appel
- Built a tool to derive efficient program transformations from specifications, and used it automate the verification of several of CertiCoq's backend optimization passes. Helped prove CertiCoq's closure conversion pass correct. Proved various technical lemmas about name binding for CertiCoq's intermediate language.

HRL Laboratories   Jun 2019 – Aug 2019

- Supervisors: Aleksey Nogin and Michael Warren
- Worked on formal verification for machine learning components.

Princeton University   Oct 2018 – Jan 2019

- Advisor: Andrew Appel
- Learned about the use of logical relations for compiler correctness and proved CertiCoq's uncurrying pass correct.

TEACHING EXPERIENCE

Teaching Assistant, Northeastern University   Feb 2023 – May 2023

Logic and Computation (CS 2800)

Graded assignments and held office hours

Preceptor, Princeton University   Sep 2020 – Dec 2020

Functional Programming (COS 326)

Led weekly precepts, graded assignments, and held office hours

Teaching Assistant, Princeton University   Feb 2020 – May 2020

Programming Languages (COS 510)

Graded assignments and held office hours

Preceptor, Princeton University   Sep 2019 – Jan 2019

Introduction to Programming Systems (COS 217)

Led weekly precepts, graded assignments, and held office hours

SKILLS   Functional programming (Coq, Haskell, OCaml, Standard ML), scripting languages (Python, JavaScript), Prolog, LaTeX, comfortable with Unix environment and Git

PUBLICATIONS

[1] John M. Li, Amal Ahmed, and Steven Holtzen, "Lilac: A Modal Separation Logic for Conditional Probability," in *Programming Language Design and Implementation*, Orlando, Florida, USA, Jun 2023.

[2] John M. Li and Andrew W. Appel, "Deriving Efficient Program Transformations from Rewrite Rules," in *International Conference on Functional Programming*, Aug 2021.

[3] Zoe Paraskevopoulou, John M. Li, and Andrew W. Appel, "Compositional Optimizations for CertiCoq," in *International Conference on Functional Programming*, Aug 2021.