Alaia Solko-Breslin

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AGH 642, 3333 Chestnut St ◇ Philadelphia, PA 19104

EDUCATION

University of Pennsylvania Fall 2022 - Present
Ph.D. in Computer and Information Science
Advisor: Rajeev Alur

Cornell University Fall 2021 - Spring 2022
M.Eng. in Computer Science
GPA: 4.08

Cornell University Fall 2018 - Spring 2021
B.S. in Computer Science
Minor in Applied Mathematics
GPA: 3.81

RESEARCH INTERESTS

My research interests span machine learning, programming languages, and formal methods. My current research focuses on 1) scalable neurosymbolic learning algorithms and 2) using neursymbolic programming to improve the correctness of LLM-generated code and ML predictions for clinical diagnosis.

PUBLICATIONS

∗ denotes equal contribution

Refereed Conference Publications

- *CTSketch: Compositional Tensor Sketching for Scalable Neurosymbolic Learning*
  Seewon Choi*, **Alaia Solko-Breslin***, Rajeev Alur, Eric Wong.
  NeurIPS 2025
- *Understanding the Effectiveness of Large Language Models in Detecting Security Vulnerabilities*
  Avishree Khare*, Saikat Dutta*, Ziyang Li, **Alaia Solko-Breslin**, Rajeev Alur, Mayur Naik.
  ICST 2025
- *Data-Efficient Learning with Neural Programs*
  Alaia Solko-Breslin, Seewon Choi, Ziyang Li, Neelay Velingker, Rajeev Alur, Mayur Naik, Eric Wong.
  NeurIPS 2024
- *Automata Learning with an Incomplete Teacher*
  Mark Moeller, Thomas Wiener, **Alaia Solko-Breslin**, Caleb Koch, Nate Foster, Alexandra Silva.
  ECOOP 2023
- *Petr4: Formal Foundations for P4 Data Planes*
  Ryan Doenges, Mina Tahmasbi Arashloo, Santiago Bautista, Alexander Chang, Newton Ni, Samwise Parkinson, Rudy Peterson, **Alaia Solko-Breslin**, Amanda Xu, Nate Foster.
  POPL 2021

WORK EXPERIENCE

Amazon Web Services Spring 2025
Applied Scientist Intern

- Implemented a framework for automatically learning preconditions for AWS APIs, contributing to my team's overall goal of using automated reasoning to improve the trustworthiness of LLM-generated code. Advised by Serdar Tasiran.

Amazon Web Services Summer 2021
Software Development Engineer Intern

- Implemented an API that performs a deep health check of our authentication service.
- Implemented canaries that would continuously make requests to this health check and our service and report metrics.

Amazon Web Services Summer 2020
Software Development Engineer Intern

- Designed and implemented an API that allows test fleets to obtain the posture that is necessary for them to reach services in Native AWS.

TEACHING

University of Pennsylvania
Teaching Assistant

- CIS 7000: Special Topics: Trustworthy Machine Learning Spring 2024
  Instructors: Rajeev Alur and Osbert Bastani
- CIS 5000: Software Foundations Fall 2023
  Instructor: Benjamin Pierce
  Lectures taught: "Induction and data structures"

Cornell University
Teaching Assistant

- CS 4160/5160: Formal Verification Spring 2022
  Instructor: Michael Clarkson
- CS 3110: Data Structures and Functional Programming Fall 2021
  Instructor: Michael Clarkson
- CS 4820: Introduction to Analysis of Algorithms Spring 2021
  Instructor: Robert Kleinberg
- CS 4820: Introduction to Analysis of Algorithms Fall 2020
  Instructor: Dexter Kozen
- CS 3110: Data Structures and Functional Programming Spring 2020
  Instructor: Nate Foster
- CS 3110: Data Structures and Functional Programming Fall 2019
  Instructor: Michael Clarkson

AWARDS

AWS-AI ASSET Fellow 2024
Funding to support research on safe, explainable, and trustworthy AI-enabled systems.

John Grist Brainerd Doctoral Fellowship (UPenn) 2022

SERVICE

NeurIPS Reviewer	2025
PLDI Student Volunteer	2023

LEADERSHIP AND MENTORSHIP

CISDA Co-President	Fall 2024 - Present
CIS Mentorship Program Mentor	Fall 2023 - Present
CIS Mentorship Program Volunteer	Fall 2023 - Present
CIS TGIF Event Coordinator	Summer 2023 - Summer 2024
CIS Office Committee Member	Summer 2023 - Summer 2024

TRAVEL FUNDING

Summer School on Formal Techniques Funding	2023
Programming Languages Mentoring Workshop at PLDI Funding	2022

TECHNICAL SKILLS

Programming Languages	Python, Java, OCaml, Rust, Rocq, Ruby, Racket, Dafny, C
Tools	Pytorch, Git, LaTeX, Z3