

Talia Lily Ringer

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<http://tlringer.github.io/>

EDUCATION

University of Washington 2015 – Present
Ph.D. in Computer Science
M.S. in Computer Science 2017
Advisor: Dan Grossman
Programming Languages & Software Engineering

University of Maryland, College Park 2008 – 2012
B.S. in Mathematics and Computer Science
Advisor: Lawrence Washington
Honors Thesis: [An Elliptic Curve Threshold Key Establishment Scheme](#)

PUBLICATIONS

Talia Ringer, Nathaniel Yazdani, John Leo, and Dan Grossman.
[Adapting Proof Automation to Adapt Proofs.](#)
CPP 2018. [Talk video.](#)

Talia Ringer, Dan Grossman, Daniel Schwartz-Narbonne, and Serdar Tasiran.
[A Solver-Aided Language for Test Input Generation.](#)
OOPSLA 2017. [Talk Video.](#)

Talia Ringer, Dan Grossman, and Franziska Roesner.
[AUDACIOUS: User-Driven Access Control with Unmodified Operating Systems.](#)
CCS 2016. [Talk Video.](#)

RESEARCH VISION

My vision is a future of **verification** and **proof engineering** that makes interactive theorem provers accessible to any programmer. My research applies techniques from **example-based program synthesis**, **program evolution**, and **proof reuse** to a view of **proof automation** that considers how verification projects change over time.

CURRENT RESEARCH

Proof Patching

Talia Ringer, Nate Yazdani, John Leo, and Dan Grossman

Proof brittleness and difficulties using dependent types are major barriers to development in interactive theorem provers like Coq. We are working on proof automation that addresses these barriers. Our prototype tool [PUMPKIN PATCH](#) uses an example-based approach to address proof brittleness. We are extending it to automatically search for equivalences between types, then use the equivalences it finds to port functions and proofs between those types.

Proof Engineering

Talia Ringer, Karl Palmskog, Dan Grossman, Zach Tatlock, Ilya Sergey, and Milos Gligoric.

Proofs are ultimately software, and there is a growing body of work on proof engineering tools and techniques. We are working on a comprehensive survey paper to collect this work into one place and identify areas of need and future development.

HONORS & AWARDS

NSF GRFP Fellow

Graduated with Honors in Computer Science

Graduation Speech Finalist

Corporate Scholar

Scholar Athlete

University of Washington

University of Maryland

University of Maryland

University of Maryland

University of Maryland

INDUSTRY

Amazon

Summer 2016

Research Scientist Intern

Worked with the Automated Reasoning Group on automatic test generation. Developed a solver-aided domain-specific language to generate test inputs.

Amazon

2012 – 2015

Software Development Engineer

Worked with a team to develop the AmazonSupply website. Wrote and deployed code used company-wide and loaded hundreds of thousands of times per day. Developed a data flow analysis tool. Launched Amazon Business.

Amazon

Summer 2011

Software Development Engineer Intern

Developed an internal web application to generate metadata for the AmazonSupply website in a safe and user-friendly manner. Enabled version control and staging for the metadata.

Carr Astronautics

2010 – 2011

Corporate Scholars Program – Software Intern

Assisted in the development of a parallel image mosaicing application. Wrote code in C, MATLAB, and Java to read, alter, and write TIFF images with associated geographic data. Awarded a scholarship through the University of Maryland's Corporate Scholars Program.

MENTORSHIP, DIVERSITY, & OUTREACH

JFS

2017 – Present

ESL tutor for elderly refugees.

UW CSE

2015 – Present

Mentor for undergraduate women and graduate students in computer science.

UW QMP

2016 – Present

Mentor for LGBT students from any major.

The Identity Function	2016 – Present
Author of a blog interview series about LGBT computer science researchers.	
TUNE House	2015 – 2016
Mentor for undergraduate women in computer science.	
Amazon	2012 – 2015
Technical and career mentor for several software engineers.	
UMD ASCDU	2010
Mathematics and computer science tutor for student-athletes.	

SERVICE

CoqPL Program Committee	2019
POPL Artifact Evaluation Committee	2018, 2019
University of Washington Graduate Admissions Committee	2018

TEACHING

University of Washington <i>Teaching Assistant for Concepts of Programming Languages</i>	<i>Fall 2018</i>
University of Washington <i>Teaching Assistant for Compilers</i>	<i>Winter 2016</i>
University of Maryland, College Park <i>Teaching Assistant for Computer and Network Security</i>	<i>Spring 2012</i>

INTERESTS

Other academic interests of mine include **domain-specific languages**, **program analysis**, **type systems**, **category theory**, **algebra**, **computer security**, and **cryptology**.

I enjoy writing **Coq plugins** and have implemented several tutorial plugins to help other plugin developers. I have also [extended](#) Rosette to handle strings.

My favorite programming languages are **Coq**, **OCaml**, and **Rosette**. I also like learning foreign languages: I speak **Hebrew**, and I am currently learning **Russian**.

I compete for **Club Northwest**, a top distance running club. I served on the board of Club Northwest from 2015 to 2016. My role was to promote our top runners through social media and writing. I ran **NCAA Division I Cross-Country** in 2009.

I also enjoy **logic and number puzzles**, **esoteric programming languages**, **writing**, **singing**, **making bagels**, and **composing music for the piano**.