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 is a major barrier to development in interactive theorem provers like Coq. We
are working on proof automation in interactive theorem provers that automatically adapts proofs
to breaking changes. Our prototype tool PUMPKIN PATCH generalizes an example adaptation
into a reusable patch that can fix broken proofs. We are currently extending it and unifying it
with existing work on ornaments.

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	*University of Washington*
Graduated with Honors in Computer Science	*University of Maryland*
Graduation Speech Finalist	*University of Maryland*
Corporate Scholar	*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 & 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.

SERVICE

POPL Artifact Evaluation Committee   2018
University of Washington Admissions Committee   2018

TEACHING

University of Washington   *Winter 2016*
Teaching Assistant for Compilers

University of Maryland, College Park   *Spring 2012*
Teaching Assistant for Computer and Network Security

University of Maryland Academic Support & Career Development Unit   *2010*
Mathematics and Computer Science Tutor for Student-Athletes

INTERESTS

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

I enjoy learning **natural languages.** I am almost fluent in Hebrew. I studied Japanese for four years, and I have a very elementary understanding of French. 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, and was a scholar-athlete.

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