

# Talia Lily Ringer

<https://dependtyp.es>

## EDUCATION

### University of Washington

Ph.D. in Computer Science

M.S. in Computer Science

Advisor: Dan Grossman

2015 – Present

Spring 2021, expected

2017

### University of Maryland, College Park

B.S. in Mathematics and Computer Science

Advisor: Lawrence Washington

Honors Thesis: [An Elliptic Curve Threshold Key Establishment Scheme](#)

2008 – 2012

## PUBLICATIONS

Talia Ringer, RanDair Porter, Nathaniel Yazdani, John Leo, and Dan Grossman.

Proof Repair by Proof Term Transformation.

Under Submission.

Talia Ringer, Alex Sanchez-Stern, Dan Grossman, and Sorin Lerner.

[REPLICA: REPL Instrumentation for Coq Analysis.](#)

CPP 2020. [Talk video](#).

Talia Ringer, Karl Palmskog, Ilya Sergey, Milos Gligoric, and Zachary Tatlock.

[QED at Large: A Survey of Engineering of Formally Verified Software.](#)

Foundations and Trends® in Programming Languages: Vol. 5: No. 2-3, pp 102-281. 2019.

[Project website](#).

Talia Ringer, Nathaniel Yazdani, John Leo, and Dan Grossman.

[Ornaments for Proof Reuse in Coq.](#)

ITP 2019. [Talk video](#), DEVOID [tool repository](#).

Talia Ringer, Nathaniel Yazdani, John Leo, and Dan Grossman.

[Adapting Proof Automation to Adapt Proofs.](#)

CPP 2018. [Talk video](#), PUMPKIN PATCH [tool repository](#).

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 main interest is in making **program verification** using interactive theorem provers more accessible through better **proof engineering** tools and practices, especially when it comes to *maintaining* proofs as programs change over time. My research extends traditional **proof automation** to view proofs as fluid entities that change over time. My vision is a future of verification with the help of these tools that is accessible to all programmers, not just to experts. I believe that this will help make software more reliable and secure.

## UNDERGRADUATE STUDENTS ADVISED

Taylor Blau (now at Github).  
[Verifying Strong Eventual Consistency in  \$\delta\$ -CRDTs](#).  
Senior Thesis.

Jasper Hugunin (now at CMU).  
[Constructing Inductive-Inductive Types in Cubical Type Theory](#).  
FOSSACS 2019.

## INDUSTRY

**Amazon (Automated Reasoning Group)** *Summer 2016*  
*Research Scientist Intern*  
Developed a solver-aided domain-specific language to generate test inputs.

**Amazon (Amazon Business)** *2012 – 2015*  
*Software Development Engineer*  
Wrote code used company-wide & loaded hundreds of thousands of times per day.

## HONORS & AWARDS

<b>College of Engineering Quarterly Fellow</b>	<i>University of Washington</i>
<b>P.E.O. Scholar</b>	<i>University of Washington</i>
<b>NSF GRFP Fellow</b>	<i>University of Washington</i>
<b>Graduated with Honors in Computer Science</b>	<i>University of Maryland</i>
<b>Graduation Speech Finalist</b>	<i>University of Maryland</i>
<b>Corporate Scholar</b>	<i>University of Maryland</i>
<b>Scholar Athlete</b>	<i>University of Maryland</i>

## MENTORSHIP, DIVERSITY, & OUTREACH

**ICFP Mentorship Program** *2020 – Present*  
Organizer of a long-term programming languages mentorship program.

**Shut Down PL** *2020*  
Coorganizer of an anti-racist workshop for programming languages researchers.

**Neighbors Feeding Neighbors Seattle** *2020 – Present*  
Packer of food & masks for the hungry during the COVID-19 pandemic.

<b>UW CSE Care Committee</b> Founder & organizer of a support network for graduate students in times of need.	<i>2019 – Present</i>
<b>Jewish Family Services</b> ESL tutor and friendly visitor for an elderly refugee.	<i>2017 – Present</i>
<b>UW CSE</b> Mentor for undergraduate women and graduate students in computer science.	<i>2015 – 2020</i>
<b>UW QMP</b> Mentor for LGBT students from any major.	<i>2016 – 2019</i>
<b>The Identity Function</b> Author of a <a href="#">blog interview series</a> about LGBT computer science researchers.	<i>2016 – 2018</i>
<b>TUNE House</b> Mentor for undergraduate women in computer science.	<i>2015 – 2016</i>
<b>Amazon</b> Technical and career mentor for software engineers.	<i>2012 – 2015</i>

## SERVICE

<b>Mathematical Structures in Computer Science Reviewer</b>	<i>2020</i>
<b>Human Aspects of Types and Reasoning Assistants Program Committee</b>	<i>2020</i>
<b>ICFP Mentoring Chair</b>	<i>2020</i>
<b>ICFP Programming Languages Mentoring Workshop (PLMW) Co-Chair</b>	<i>2020</i>
<b>University of Washington Visit Days Panelist</b>	<i>2020</i>
<b>POPLmark 15 Year Retrospective Panel Lead Organizer</b>	<i>2020</i>
<b>CAV Artifact Evaluation Committee</b>	<i>2019</i>
<b>CoqPL Program Committee</b>	<i>2019</i>
<b>POPL Artifact Evaluation Committee</b>	<i>2018, 2019</i>
<b>ITP Sub-Reviewer</b>	<i>2018</i>
<b>University of Washington Graduate Admissions Committee</b>	<i>2018</i>
<b>DeepSpec Summer School Student Talks Organizer</b>	<i>2017</i>

## INVITED TALKS

<b>Proof Repair by Proof Term Transformation</b> Cornell Programming Languages Discussion Group	<i>Fall 2020</i>
<b><a href="#">Proof Transformation</a></b> <a href="#">Logic Supergroup</a> Seminar Series	<i>Spring 2020</i>
<b>Proof Engineering Tools for a New Era</b> Rising Stars in CS Lecture Series at UMass Amherst	<i>Fall 2019</i>

## INVITED SEMINARS AND WORKSHOPS

<b>Dagstuhl Seminar</b> Static Methods for Correctness of Model and Program Transformations	<i>Delayed (COVID-19)</i>
<b>Coq Users and Developers Workshop</b> An Event for Understanding, Improving, and Extending Coq	<i>Summer 2018, 2019</i>
<b>Rising Stars</b> An Academic Career Workshop for Women in EECS	<i>Fall 2019</i>

## TEACHING

<b>University of Washington</b> <i>Teaching Assistant for Concepts of Programming Languages</i>	<i>Fall 2018</i>
<b>University of Washington</b> <i>Teaching Assistant for Compilers</i>	<i>Winter 2016</i>
<b>University of Maryland, College Park</b> <i>Teaching Assistant for Computer and Network Security</i>	<i>Spring 2012</i>
<b>University of Maryland, College Park</b> <i>Mathematics and Computer Science Tutor for Student-Athletes</i>	<i>2010</i>

## INTERESTS

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

My favorite programming languages are **Coq, OCaml, and Rosette**. I enjoy writing **Coq plugins** and have implemented several tutorial plugins to help other plugin developers. I am a contributor to the Coq proof assistant. I have [extended](#) Rosette to handle strings.

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 **solving logic and number puzzles, writing poetry, singing, studying Russian, making bagels, foraging edible mushrooms, and composing music for the piano.**