

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

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

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

SERVICE

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

INVITED TALKS

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

INVITED SEMINARS AND WORKSHOPS

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

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>
University of Maryland, College Park <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**.