

Ben Greenman
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RESEARCH INTERESTS

General interests: Language design issues regarding proofs, performance, and people. What guarantees do languages offer, how efficiently can they run, and to what extent do they help users meet their goals?

Keywords: Migratory typing, Language interoperability, Formal methods, Human factors

EMPLOYMENT AND EDUCATION

- *Assistant Professor of Computer Science, University of Utah* July 2023 – ongoing
- *Postdoctoral Researcher, Brown University* 2021 – 2023
supported by the CIFellows 2020 program
Mentor: Shriram Krishnamurthi
- *Ph.D. in Computer Science, Northeastern University* 2014 – 2020
Advisor: Matthias Felleisen
Thesis: Deep and Shallow Types
- *M. Eng. in Computer Science, Cornell University* 2013 – 2014
Advisor: Ross Tate
- *Programmer, Rentenna Inc.* 2012 – 2014
- *B.S. in Industrial and Labor Relations (ILR), Cornell University* 2010 – 2013
Minor in Computer Science
- *General studies, Hudson Valley Community College* 2009 – 2010
toward a guaranteed transfer to Cornell ILR

HONORS AND AWARDS

- *Open Source Research Experience: Static Python Perf* 2024
received summer support for Mrigank Pawagi, an undergraduate researcher from IIS Begaluru
sponsored by the NSF 2024 Summer of Reproducibility

- CRA/CCC/NSF CI Fellowship 2021 – 2023
- SIGPLAN Student Scholarship to 50 Years of the ACM A.M. Turing Award 2017
- Northeastern CCIS Graduate Community Service Award 2016
- Cornell CS Teaching Award 2014
- Cornell CS Teaching Award 2013

FUNDING ---

No external funding as of November 2024.

PUBLICATIONS ---

JOURNAL

- Ben Greenman, Christos Dimoulas, and Matthias Felleisen. *Typed–Untyped Interactions: A Comparative Analysis* **TOPLAS, March 2023**
- Ben Greenman, Asumu Takikawa, Max S. New, Daniel Feltey, Robert Bruce Findler, Jan Vitek, and Matthias Felleisen. *How to Evaluate the Performance of Gradual Type Systems* **JFP 2019**

CONFERENCE, SYMPOSIUM, AND SIMILAR

- Ashton Wiersdorf, Stephen Chang, Matthias Felleisen, and Ben Greenman *Type Tailoring* **ECOOP 2024**
- Ben Greenman, Siddhartha Prasad, Antonio Di Stasio, Shufang Zhu, Giuseppe De Giacomo, Shriram Krishnamurthi, Marco Montali, Tim Nelson, and Milda Zizyte *Misconceptions in Finite-Trace and Infinite-Trace Linear Temporal Logic* **FM 2024**
- Tim Nelson, Ben Greenman, Siddhartha Prasad, Tristan Dyer, Ethan Bove, Qianfan Chen, Charles Cutting, Thomas Del Vecchio, Sidney LeVine, Julianne Rudner, Ben Ryjikov, Alexander Varga, Andrew Wagner, Luke West, and Shriram Krishnamurthi *Forge: A Tool and Language for Teaching Formal Methods* **OOPSLA 2024**
- Ben Greenman, Alan Jeffrey, Shriram Krishnamurthi, and Mitesh Shah *Privacy-Respecting Type Error Telemetry at Scale* **Programming 8.3, 2024**
- Siddhartha Prasad, Ben Greenman, Tim Nelson, and Shriram Krishnamurthi *Conceptual Mutation Testing for Student Programming Misconceptions* **Programming 8.2, 2024**
- Siddhartha Prasad, Ben Greenman, Tim Nelson, and Shriram Krishnamurthi *Generating Programs Trivially: Student Use of Large Language Models* **CompEd, December 2023**

- Ben Greenman, Matthias Felleisen, and Christos Dimoulas OOPSLA, October 2023
How Profilers Can Help Navigate Type Migration
- Matthew Flatt, Taylor Allred, Nia Angle, Stephen De Gabrielle, Robert Findler, Jack Firth, Kiran Gopinathan, Ben Greenman, Siddhartha Kasivajhula, Alex Knauth, Jay McCarthy, Sam Phillips, Sorawee Porncharoenwase, Jens Axel Søgaard, and Sam Tobin-Hochstadt OOPSLA, October 2023
Rhombus: A New Spin on Macros Without All The Parentheses
- Lukas Lazarek, Ben Greenman, Matthias Felleisen, and Christos Dimoulas ICFP, August 2023
How to Evaluate Blame for Gradual Types, Part 2
- Ben Greenman ACM REP, June 2023
GTP Benchmarks for Gradual Typing Performance
- Ben Greenman, Sam Saarinen, Tim Nelson, and Shriram Krishnamurthi Programming 7.2, March 2023
Little Tricky Logic: Misconceptions in the Understanding of LTL
- Kuang-Chen Lu, Ben Greenman, Carl Meyer, Dino Viehland, Aniket Panse, and Shriram Krishnamurthi Programming 7.1, March 2023
Gradual Soundness: Lessons from Static Python
- Siddhartha Prasad, Ben Greenman, Tim Nelson, John Wrenn, and Shriram Krishnamurthi Koli Calling 2022
Making Hay from Wheats: A Classsourcing Method to Identify Misconceptions
- Ben Greenman PLDI 2022
Deep and Shallow Types for Gradual Languages
- Ben Greenman, Lukas Lazarek, Christos Dimoulas, and Matthias Felleisen Programming 6.2, 2022
A Transient Semantics for Typed Racket
- Kuang-Chen Lu, Ben Greenman, and Shriram Krishnamurthi Programming 6.1, 2022
Types for Tables: A Language Design Benchmark
- Lukas Lazarek, Ben Greenman, Matthias Felleisen, and Christos Dimoulas ICFP 2021
How to Evaluate Blame for Gradual Types
- Ben Greenman, Matthias Felleisen, and Christos Dimoulas OOPSLA 2019
Complete Monitors for Gradual Types
- Preston Tunnell Wilson, Ben Greenman, Justin Pombrio, Shriram Krishnamurthi. DLS 2018
The Behavior of Gradual Types: A User Study
- Daniel Feltey, Ben Greenman, Christophe Scholliers, Robert Bruce Findler, and Vincent St. Amour. OOPSLA 2018
Collapsible Contracts: Fixing a Pathology of Gradual Typing
- Ben Greenman, Matthias Felleisen. ICFP 2018
A Spectrum of Type Soundness and Performance
- Ben Greenman, Zeina Migeed. PEPM 2018
On the Cost of Type-Tag Soundness

- Sam Tobin-Hochstadt, Matthias Felleisen, Robert Bruce Findler, Matthew Flatt, Ben Greenman, Andrew M. Kent, Vincent St-Amour, T. Stephen Strickland, and Asumu Takikawa. *Migratory Typing: 10 Years Later* SNAPL 2017
- Stephen Chang, Ben Greenman, and Alex Knauth. *Type Systems as Macros* POPL 2017
- Asumu Takikawa, Daniel Feltey, Ben Greenman, Max S. New, Jan Vitek, and Matthias Felleisen. *Is Sound Gradual Typing Dead?* POPL 2016
- Ben Greenman, Fabian Muehlboeck, and Ross Tate. *Getting F-Bounded Polymorphism into Shape* PLDI 2014

WORKSHOP

- Dibri Nsofor and Ben Greenman *Toward a Corpus Study of the Dynamic Gradual Type* HATRA 2024
- Taylor Allred, Xinyi Li, Ashton Wiersdorf, Ben Greenman, and Ganesh Gopalakrishnan *FlowFPX: Nimble Tools for Debugging Floating-Point Exceptions* JuliaCon, July 2023
- Asumu Takikawa, Daniel Feltey, Ben Greenman, Max S. New, Jan Vitek, and Matthias Felleisen. *Position Paper: Performance Evaluation for Gradual Typing* STOP 2015

INVITED TALKS

- [Iowa State CS Colloquium](#) *Toward a Science of Type System Design* November 2024
- [Research Challenges in Computing @ University of Utah](#) *Rigorous Methods for Language Design* 2024
- [PLT @ Northwestern University](#) *Teaching Formal Methods with Forge* September 2024
- [IETF 120: Usable Formal Methods Research Group](#) *Forge: Usable Model-Finding* July 2024
- [BYU Grad Seminar](#) *How Profilers Can Help Navigate Type Migration* November 2023
- [TLf@AAAI-SSS'23](#) *Towards LTLf Misconceptions* March 2023
- [VardiFest, NJPLS](#) *Little Tricky Logic: Misconceptions in the Understanding of LTL* 2022

- Racket Con 2020, 2022
Shallow Typed Racket
Shallow and Optional Types for Typed Racket
- Boston University POPV Seminar 2020
Complete Monitoring for Gradual Types
- GRACE Workshop 2018
Three Approaches to Gradual Typing

TEACHING

UTAH

			Enrollment (Responded)	Course (Avg)	Instructor (Avg)
Spring 25	CS 4470	Compilers	<i>TBD</i>	<i>TBD</i>	<i>TBD</i>
	CS 7936	PhD. Seminar	<i>TBD</i>	<i>TBD</i>	<i>TBD</i>
Fall 24	<i>N/A</i>	<i>parental leave</i>			
Spring 24	CS 5110/6110	Software Verification	22 (20)	5.5 / 5.82 (5.18)	6 / 5.68 (5.21)
Fall 23	CS 3520/6520	Programming Languages	159 (77)	5.32 / 5.82 (5.12)	5.45 / 5.68 (5.19)

BROWN

- Topics in PL and Systems: Tables and Humans 2021
Seminar Organizer & Scribe

NORTHEASTERN

- Software Development 2018, 2020
Teaching Assistant
- Fundamentals I 2016
Teaching Assistant
- Object-Oriented Design 2016
Teaching Assistant

CORNELL

- Functional Programming and Data Structures 2012 – 2014
Teaching Assistant

ADVISING

PH.D.

- Ashton Wiersdorf, started Fall 2023
- Dibri Nsofor, started Fall 2023
- Dominic Kennedy, started Fall 2024
- Hanwen Guo, started Fall 2024

M.S.

- Suyasha Bobhate, IS Fall 2023, project: *Quantum Key-Value Stores* graduated Spring 2024

COMMITTEE MEMBERSHIP

- Zhaofeng Li, Ph.D, advisor Anton Burtsev
- Sara Nurollahian, Ph.D, advisor Eliane Wiese

INFORMAL MENTEES

Vivaan Rajesh		Hillcrest High School	2023 – 2024
Siddhartha Prasad	Ph.D.	Brown University	2022 – ongoing
Rob Durst			Fall 2023
Caspar Popova			Spring – Fall 2023
Aniket Karna	M.S.	University of Utah	Fall 2023
Taylor Allred	M.S.	University of Utah	2022 – 2023
Qianfan Chen	Sc.B.	Brown University [thesis]	2021 – 2022
Kuang-Chen Lu	Ph.D.	Brown University	2021 – 2022
Milo Davis	B.S.	Northeastern University	2017
Zeina Migeed	B.S.	Northeastern University	2016 – 2017

DEPARTMENT, COLLEGE, AND UNIVERSITY SERVICE

- Price College Exploring Engineering Summer Camp Summer 2024
- Teaching Area Coordinator: Programming Languages and Web Fall 2023 – ongoing
- K-12 Outreach Planning Committee Fall 2023 – ongoing

EXTERNAL SERVICE

- Co-Chair of Workshop Organization ICFP 2026, *ICFP/SPLASH 2025*
- Co-Chair of Artifact Evaluation Committee & ERC *OOPSLA 2023, 2022*
- Program Committee *ICFP 2021*
OOPSLA 2025
PLDI 2025, 2021

- External Review Committee DLS 2022
HATRA 2024, 2023, 2022
SOAP 2024
TFP 2025, 2023
ESOP 2023, ICFP 2023
- Journal Review JFP 2024, 2023, 2020, 2019
JuliaCon 2024
STTT 2024
TOPLAS 2023
- NSF Panel Review 2024
- Artifact Evaluation Committee ECOOP 2017, OOPSLA 2017, 2016
- Session Chair OOPSLA 2023, NJPLS 2023, ICFP 2021
- SIGPLAN-M Long-Term Mentor Fall 2024 – ongoing
- El Turco: Human-AI dialogue Spring 2024

PROFESSIONAL MEMBERSHIPS

- IEEE, Member 2023 – ongoing
- IEEE Computer Society, Member 2023 – ongoing
- ACM, Member 2023 – ongoing
- ACM SIGPLAN, Member 2016 – ongoing

BIOGRAPHY

Ben Greenman is an assistant professor in the Kahlert School of Computing at the University of Utah. He earned his Ph.D. from Northeastern University in 2020 and was a CIFellows 2020 postdoc at Brown University. His research focus is the science of language design. His team develops methods to measure performance, prove guarantees, and understand human factors for languages and systems.