

Ben Greenman
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College of Engineering
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RESEARCH INTERESTS

General interests: Language design issues regarding proofs, performance, and people. What guarantees do languages offer, how efficiently do 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: Type Narrowing: A Language Design Benchmark 2025
received summer support for Siva Sathyaseelan, an undergraduate researcher from IIT (BHU) Varanasi
sponsored by the *NSF 2025 Summer of Reproducibility*

- **Open Source Research Experience: Static Python Perf** 2024
received summer support for Mrigank Pawagi, an undergraduate researcher from IIS Bengaluru 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

- Price College VPR Seed Grant Competition 2025

No external funding to date.

PUBLICATIONS

JOURNAL

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

CONFERENCE & SYMPOSIUM

- Hanwen Guo and Ben Greenman **Programming 10.2, 2025**
If-T: A Benchmark for Type Narrowing
- Siddhartha Prasad, Ben Greenman, Tim Nelson, and Shriram Krishnamurthi **CAV 2025**
A Misconception-Driven Adaptive Tutor for Linear Temporal Logic
Distinguished Paper Award
- Siddhartha Prasad, Ben Greenman, Tim Nelson, and Shriram Krishnamurthi **ECOOP 2025**
Lightweight Diagramming for Lightweight Formal Methods: A Grounded Language Design
Distinguished Paper Award
- Ashton Wiersdorf, Stephen Chang, Matthias Felleisen, and Ben Greenman **ECOOP 2024**
Type Tailoring

- Ben Greenman, Siddhartha Prasad, Antonio Di Stasio, Shufang Zhu, Giuseppe De Giacomo, Shriram Krishnamurthi, Marco Montali, Tim Nelson, and Milda Zizyte FM 2024
Misconceptions in Finite-Trace and Infinite-Trace Linear Temporal Logic
- 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 OOPSLA 2024
Forge: A Tool and Language for Teaching Formal Methods
- Ben Greenman, Alan Jeffrey, Shriram Krishnamurthi, and Mitesh Shah Programming 8.3, 2024
Privacy-Respecting Type Error Telemetry at Scale
- Siddhartha Prasad, Ben Greenman, Tim Nelson, and Shriram Krishnamurthi Programming 8.2, 2024
Conceptual Mutation Testing for Student Programming Misconceptions
- Siddhartha Prasad, Ben Greenman, Tim Nelson, and Shriram Krishnamurthi CompEd, December 2023
Generating Programs Trivially: Student Use of Large Language Models
- Ben Greenman, Matthias Felleisen, and Christos Dimoulas OOPSLA 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 2023
Rhombus: A New Spin on Macros Without All The Parentheses
- Lukas Lazarek, Ben Greenman, Matthias Felleisen, and Christos Dimoulas ICFP 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, 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, 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 6.2, 2022
Types for Tables: A Language Design Benchmark
Editors' Choice Award

- 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. SNAPL 2017
Migratory Typing: 10 Years Later
- Stephen Chang, Ben Greenman, and Alex Knauth. POPL 2017
Type Systems as Macros
- Asumu Takikawa, Daniel Feltey, Ben Greenman, Max S. New, Jan Vitek, and Matthias Felleisen. POPL 2016
Is Sound Gradual Typing Dead?
- Ben Greenman, Fabian Muehlboeck, and Ross Tate. PLDI 2014
Getting F-Bounded Polymorphism into Shape

WORKSHOP

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

INVITED TALKS

- RPI CS Seminar June 2025
Kicking the Ladder Away: From Gradual Types to Plain Types

- [Iowa State CS Colloquium](#) November 2024
Toward a Science of Type System Design
- [Research Challenges in Computing @ University of Utah](#) 2024
Rigorous Methods for Language Design
- [PLT @ Northwestern University](#) September 2024
Teaching Formal Methods with Forge
- [IETF 120: Usable Formal Methods Research Group](#) July 2024
Forge: Usable Model-Finding
- [BYU Grad Seminar](#) November 2023
How Profilers Can Help Navigate Type Migration
- [TLf@AAAI-SSS'23](#) March 2023
Towards LTLf Misconceptions
- [VardiFest](#) 2022
[NJPLS](#)
Little Tricky Logic: Misconceptions in the Understanding of LTL
- [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) |
|-----------|--------------|-----------------------|---------------------------|--------------------|--------------------|
| Fall 25 | COMP 1020 | Programming for All 2 | <i>TBD</i> | <i>TBD</i> | <i>TBD</i> |
| Spring 25 | CS 4470 | Compilers | 58 (51) | 5.28 (?) | 5.43 (?) |
| | CS 7936 | PhD. Seminar | 6 | 6 | 6 |
| 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 Teaching Assistant 2018, 2020
- Fundamentals I Teaching Assistant 2016
- Object-Oriented Design Teaching Assistant 2016

CORNELL

- Functional Programming and Data Structures Teaching Assistant 2012 – 2014

ADVISING

PH.D.

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

MASTERS

- Dibri Nsofor, MSc expected Fall 2025
project: *Data Science for Gradual Types*
- Suyasha Bobhate, IS Fall 2023 graduated Spring 2024
project: *Quantum Key-Value Stores*

UNDERGRAD

- Jackson Brough, BS expected Spring 2026
thesis: *Constructive Real Analysis via Locators*

COMMITTEE MEMBERSHIP

- [Guillaume Duboc](#), Ph.D, advisor [Guiseppe Castagna](#)
- Zhaofeng Li, Ph.D, advisor [Anton Burtsev](#)
- Sara Nurollahian, Ph.D, advisor [Eliane Wiese](#)

INFORMAL MENTEES

| | | | |
|-------------------|-------|---------------------------|--------------------|
| Siva Sathyaseelan | | IIT (BHU) Varanasi | Summer 2025 |
| Mrigank Pawagi | | IIS Bengaluru | Summer 2024 |
| 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

- Committee Member: Lecturing Faculty Hiring Fall 2025 – Spring 2026
- Faculty Mentor: CS 1960: Success in Computing Summer 2025 – ongoing
- Committee Member: Graduate Admissions Spring 2025
- Teacher: Price College Hi-Gear Summer Camp Summer 2025
- Teacher: Price College Exploring Engineering Summer Camp Summer 2024
- Teaching Area Chair: Programming Languages and Web Fall 2023 – ongoing
- Committee Member: K-12 Outreach Planning Committee Fall 2023 – Summer 2025

EXTERNAL SERVICE

- Co-Chair of Workshop Organization ICFP 2026, ICFP/SPLASH 2025
- Co-Chair of Artifact Evaluation Committee & ERC OOPSLA 2023, 2022
- Program Committee
 - DLS 2022
 - HATRA 2025, 2024, 2023, 2022
 - ICFP 2021
 - OOPSLA 2025
 - PLDI 2025, 2021
 - Scheme 2025
 - SOAP 2024
 - TFP 2025, 2023
- External Review Committee ESOP 2023, ICFP 2023
- Journal Review
 - JFP 2024, 2023, 2020, 2019
 - JuliaCon 2024
 - SoftwareX 2025

- NSF Panel Review 2025, 2024
- Artifact Evaluation Committee ECOOP 2017; OOPSLA 2017, 2016
- Session Chair ICFP 2021; NJPLS 2023; OOPSLA 2023
- SIGPLAN-M Long-Term Mentor Fall 2024 – ongoing
- El Turco: Human–AI dialogue show: Mori Art Museum, 2025-02-13 – 2025-06-08 Spring 2024
- Senior Division Judge: University of Utah Science and Engineering Fair Spring 2025

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.