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

- *Intern 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

Publications

Journal

- Ben Greenman, Christos Dimoulas, and Matthias Felleisen.   TOPLAS, March 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, and Similar

- Ashton Wiersdorf, Stephen Chang, Matthias Felleisen, and Ben Greenman   ECOOP 2024
  Type Tailoring

- Ben Greenman, Siddhartha Prasad, Antonio Di Stasio, Shufang Zhu,   FM 2024
  Giuseppe De Giacomo, Shriram Krishnamurthi, Marco Montali, Tim Nelson, and Milda Zizyte
  Misconceptions in Finite-Trace and Infinite-Trace Linear Temporal Logic

- Tim Nelson, Ben Greenman, Siddhartha Prasad, Tristan Dyer, Ethan Bove,   OOPSLA 2024
  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

- 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,   CompEd, December 2023
  and Shriram Krishnamurthi
  Generating Programs Trivially: Student Use of Large Language Models

- 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,   OOPSLA, October 2023
  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
  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,   Programming 7.2, March 2023
  and Shriram Krishnamurthi
  Little Tricky Logic: Misconceptions in the Understanding of LTL

- Kuang-Chen Lu, Ben Greenman, Carl Meyer, Dino Viehland,   Programming 7.1, March 2023
  Aniket Panse, and Shriram Krishnamurthi
  Gradual Soundness: Lessons from Static Python

- Siddhartha Prasad, Ben Greenman, Tim Nelson, John Wrenn,   Koli Calling 2022
  and Shriram Krishnamurthi
  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,   OOPSLA 2018
  and Vincent St. Amour.
  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 Colloqium 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, NJPLS 2022
  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)
Spring 25	CS 4470	Compilers	*TBD*		
	CS 7936	PhD. Seminar	*TBD*		
Fall 24	*N/A*	*parental leave*			
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

<div align="right">
DLS 2022
HATRA 2023, 2022
SOAP 2024
TFP 2023
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- External Review Committee <div align="right">ESOP 2023, ICFP 2023</div>

- Journal Review <div align="right">JFP 2024, 2023, 2020, 2019
JuliaCon 2024
STTT 2024
TOPLAS 2023</div>

- NSF Panel Review <div align="right">2024</div>

- Artifact Evaluation Committee <div align="right">ECOOP 2017, OOPSLA 2017, 2016</div>

- Session Chair <div align="right">OOPSLA 2023, NJPLS 2023, ICFP 2021</div>

- SIGPLAN-M Long-Term Mentor <div align="right">Fall 2024 – ongoing</div>

- El Turco: Human–AI dialogue, Spring 2024

Professional Memberships

- IEEE, Member <div align="right">2023 – ongoing</div>

- IEEE Computer Society, Member <div align="right">2023 – ongoing</div>

- ACM, Member <div align="right">2023 – ongoing</div>

- ACM SIGPLAN, Member <div align="right">2016 – ongoing</div>

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.