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

Education

- Northeastern University 2014 – 2020
  Degree Ph.D
  Area Programming Languages
  Advisor Matthias Felleisen
  Thesis Deep and Shallow Types
- Cornell University 2013 – 2014
  Degree Master of Engineering
  Major Computer Science
  Advisor Ross Tate
- Cornell University 2010 – 2013
  Degree Bachelor of Science
  Major Industrial and Labor Relations
  Minor Computer Science
- Hudson Valley Community College 2009 – 2010
  General studies, toward a guaranteed transfer to Cornell ILR

Employment

- University of Utah August 2023 – ongoing
  Assistant Professor
- Brown University 2021 – 2023
  Postdoctoral Researcher, CIFellows 2020

Mentor Shriram Krishnamurthi

- Knightsbridge Park — 2017
  Consultant, Web Scraping
- Cornell University — 2012 – 2014
  Research Assistant
- Rentenna Inc. — 2012 – 2014
  Software Engineering Intern

Teaching

- CS 5110/6110: Software Verification — 2024
  Instructor, 22 students
- CS 3520/6520: Programming Languages — 2023
  Co-Instructor with Matthew Flatt, 159 students
- Topics in PL and Systems: Tables and Humans — 2021
  Organizer
- Software Development — 2018, 2020
  Teaching Assistant
- Fundamentals I — 2016
  Teaching Assistant
- Object-Oriented Design — 2016
  Teaching Assistant
- Functional Programming and Data Structures — 2012 – 2014
  Teaching Assistant

Students Supervised

- Mrigank Pawagi — 2024 – ongoing
  Undergraduate researcher, via OSRE 2024
- Hanwen Guo — 2024 – ongoing
  Ph.D., University of Utah
- Dominic Kennedy — 2024 – ongoing
  Ph.D., University of Utah
- Dibri Nsofor — 2023 – ongoing
  Ph.D., University of Utah
- Ashton Wiersdorf — 2022 – ongoing
  Ph.D., University of Utah

- Suyasha Bobhate 2023 – 2024
  M.S, University of Utah
- Sara Nurollahian 2024 – ongoing
  Ph.D., University of Utah
  [Committee Member. Advisor: Eliane Wiese]
- Vivaan Rajesh 2023 – ongoing
  Hillcrest High School,
- Siddhartha Prasad 2022 – ongoing
  Ph.D., Brown University
- Rob Durst 2023 – 2023
  Independent Researcher,
- Caspar Popova 2023 – 2023
  Independent Researcher,
- Aniket Karna 2023 – 2023
  M.S., University of Utah
- Taylor Allred 2022 – 2023
  M.S., University of Utah
- Qianfan Chen 2021 – 2022
  Sc.B. with Honors [thesis], Brown University
- Kuang-Chen Lu 2021 – 2022
  Ph.D., Brown University
- Milo Davis 2017
  B.S., Northeastern University
- Zeina Migeed 2016 – 2017
  B.S., Northeastern University

Awards

- Open Source Research Experience: Static Python Perf 2024
  role: Mentor; funding via NSF 2024 Summer of Reproducibility
  PI Cormac Flanagan, Co-PI Stephanie Lieggi, Former PI Carlos Maltzahn
- NSF SHF: Small: Little Tricky Logics 2023
  role: Postdoc; PI Shriram Krishnamurthi, Co-PIs: Tim Nelson, Rob Lewis, and Milda Zizyte
- CRA/CCC/NSF CI Fellowship 2021 – 2023
- SIGPLAN Student Scholarship: 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

Professional Service

- NSF Panel Reviewer 2024
- Teaching Area Coordinator: Programming Languages and Web 2024
- K-12 Outreach Planning Committee 2023 – 2024
- Co-Chair of Artifact Evaluation Committee & ERC OOPSLA 2023, 2022
- Program Committee SOAP 2024, TFP 2023, HATRA 2023, 2022, DLS 2022, ICFP 2021, PLDI 2021
- Reviewer JuliaCon 2024, ACM TOPLAS 2023, JFP 2024, 2023, 2020, 2019
- External Review Committee ESOP 2023, ICFP 2023
- Artifact Evaluation Committee ECOOP 2017, OOPSLA 2017, 2016
- Session Chair OOPSLA 2023, NJPLS 2023, ICFP 2021,

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, Jan Vitek, and Matthias Felleisen. JFP 2019
  How to Evaluate the Performance of Gradual Type Systems

Conference, Symposium, and Hybrid Conference / Journal

- 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, 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 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 Bruce Finder, 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 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 6.1, 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. 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

- 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

- IETF 120: Usable Formal Methods Research Group 2024
  Forge: Usable Model-Finding
- BYU Grad Seminar 2023
  How Profilers Can Help Navigate Type Migration
- TLf@AAAI-SSS'23 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

Volunteering

- Price College Exploring Engineering Summer Camp — Summer 2024
- El Turco: Human–AI dialogue — 2023 – 2024
  Programmer
- Bootstrap Professional Development — Summer 2021
  Teaching Assistant
- Housing Chair — SPLASH 2018
- Northeastern CCIS Hiring Committee — Spring 2018
  Student Representative
- PRL Offsite — Fall 2019
  Organizer
- Each One Teach One — Fall 2015
  AP Java Tutor
- Student Volunteer — OOPSLA 2019; Turing Celebration 2017; POPL 2016, 2018; PLDI 2016; ICFP 2015, 2018; ECOOP 2015, 2016
- Ithaca Media Arts — Summer 2012
  Teacher, LEGO Mindstorms Camp
- Cornell Math Explorers — Winter 2011
  Module Designer

Professional Memberships

- IEEE — 2023 – ongoing
- IEEE Computer Society — 2023 – ongoing
- ACM — 2023 – ongoing
- ACM SIGPLAN — 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.