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

- 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,   JFP 2019
  Jan Vitek, and Matthias Felleisen.
  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,   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, 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,   OOPSLA 2023
  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 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,   Programming 7.1, 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, and Vincent St. Amour.
Collapsible Contracts: Fixing a Pathology of Gradual Typing

- Ben Greenman, Matthias Felleisen.
A Spectrum of Type Soundness and Performance

- Ben Greenman, Zeina Migeed.
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

- Stephen Chang, Ben Greenman, and Alex Knauth.
Type Systems as Macros

- Asumu Takikawa, Daniel Feltey, Ben Greenman, Max S. New, Jan Vitek, and Matthias Felleisen.
Is Sound Gradual Typing Dead?

- Ben Greenman, Fabian Muehlboeck, and Ross Tate.
Getting F-Bounded Polymorphism into Shape

Workshop

- Taylor Allred, Xinyi Li, Ashton Wiersdorf, Ben Greenman, and Ganesh Gopalakrishnan
FlowFPX: Nimble Tools for Debugging Floating-Point Exceptions

- Asumu Takikawa, Daniel Feltey, Ben Greenman, Max S. New, Jan Vitek, and Matthias Felleisen.
Position Paper: Performance Evaluation for Gradual Typing

INVITED TALKS

- PLT @ Northwestern University
Teaching Formal Methods with Forge

  2024

- IETF 120: Usable Formal Methods Research Group
Forge: Usable Model-Finding

  2024

- BYU Grad Seminar
How Profilers Can Help Navigate Type Migration

  2023

- TLf@AAAI-SSS'23
Towards LTLf Misconceptions

  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

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

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.