Ian McCormack

Carnegie Mellon University • Software and Societal Systems (S3D) • Pittsburgh, PA, 15213

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EDUCATION

Ph.D. in Software Engineering, Carnegie Mellon University   *September 2021 - Present*
- Coadvised by Jonathan Aldrich and Joshua Sunshine

University of Wisconsin-Eau Claire   *summa cum laude, May 2021*
- **B.S.**, Computer Science
- **B.A.**, English, Rhetorics of Science, Technology, and Culture
- **Minor**, Mathematics

PUBLICATIONS

A Study of Undefined Behavior Across Foreign Function Boundaries in Rust Libraries.
Ian McCormack, Joshua Sunshine, Jonathan Aldrich
Preprint, April 7th, 2024
[PDF]

"Against the Void": An Interview and Survey Study on How Rust Developers Use Unsafe Code.
Ian McCormack, Tomas Dougan, Sam Estep, Hanan Hibshi, Jonathan Aldrich, Joshua Sunshine.
Preprint, April 2nd, 2024.
[PDF]

Gradual C0: Symbolic Execution for Efficient Gradual Verification.
Jenna DiVincenzo, **Ian McCormack**, Hemant Gouni, Jacob Gorenburg, Mona Zhang, Conrad Zimmerman, Joshua Sunshine, Éric Tanter, Jonathan Aldrich.
Under minor revision for TOPLAS, January 19th, 2024.
[PDF]

Computational Making via Bidirectional Parametric Modeling
Chris Johnson and **Ian McCormack**.
Proceedings of Bridges 2021: Mathematics, Art, Music, Architecture, Culture
[PDF]

🏆 (2nd) - *One Program to Rule the Intersection*
Reese Grimsely, Edward Andert, **Ian C. McCormack**, Eve Hu, Bob Iannucci.
CPS-IoT Week 2021, Student Design Competition: Networked Computing on the Edge
[Video]

A Software Library Model for the Internet of Things.
Ian McCormack
ACM SPLASH 2020 Student Research Competition
[PDF]

EXPERIENCE

Student Co-Director, Carnegie Mellon University's REUSE Program   *August 2024 - Present*
- Led data collection and analysis to secure a continuing grant from the NSF as an Active REU Site through 2025.
  [Award #2407231]

Research Assistant, Carnegie Mellon University's REUSE Program   *June 2020 - May 2021*
Mentors: Bob Iannucci, Jonathan Aldrich
- Explored and prototyped a novel software repository system to allow mixing and matching disjointly-versioned software modules.

- Implemented a networking layer for the TTPython distributed programming framework to support an autonomous vehicle intersection that won 2nd place in the 2021 CPS-IoT Week's Student Design Competition.

Undergraduate Researcher, University of Wisconsin-Eau Claire   *September 2019 - March 2021*
Mentor: Chris Johnson

- Designed Scute, a programming system for creating SVG files and animations. Users write code to create vector graphics—which they can directly manipulate—and Scute repairs their programs to match the result.

- Implemented a compiler and interpreter for Scute in C, designed a visual editor using React, and deployed both as a web app using WebAssembly for interoperation.

Technology Intern, Travelers Insurance, St. Paul, Minnesota   *June - August, 2019*
Mentor: Mikko Niemioja

- Solved ongoing issues with configuring production environments by creating a .NET application to allow partial backup and restoration of Windows Registry configurations.

- Identified employees' shared frustrations with onboarding and provisioning and used Angular to create a wireframe application that would improve the experience for new hires.

Awards

2024 CyLab Presidential Fellowship, [Announcement]	2024-2025
National Science Foundation Graduate Research Fellow (NSF GRFP)	2021-2026

Talks

Examining Rust Developers' Motivations for Using `unsafe` *Code.*
- Talk at the 2023 *CyLab Partners Conference*. October 3rd, 2023.
- Guest Lecture at CMU for *Secure Coding* (14-735). November 9th, 2020.

[Slides]

Direct Manipulation for Computational Making.
Lightning Talk with Chris Johnson at *SPLASH-E*, November 20th, 2020.
[Slides], [Abstract]

Introduction to Rust.
- Guest Lecture at CMU for *Secure Coding* (14-735). August 2023 & 2024.
- Guest Lecture at CMU for *Programming Language Pragmatics* (17-363). November 2022.

[Slides]

Teaching

Co-Instructor, **CMU - Software Engineering Reflection (17-415)**	*CMU, Fall 2024*
Teaching Assistant, **CMU - Software Engineering Reflection (17-415)**	*CMU, Fall 2023*

Mentoring

Tomas Dougan, (Brown)	*CMU REUSE Program, Summer 2023*
Timothy Zhou (UCSD)	*CMU REUSE Program, Summer 2022*

Service

Student Organizer, **PLATEAU** Workshop	*2023-Present*