Ian C. McCormack

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Education

Ph.D. in Software Engineering, Carnegie Mellon University *September 2021 - Present*

- Coadvised by Dr. Jonathan Aldrich and Dr. Joshua Sunshine, research in gradual methods for verification, analysis, and type inference.
- National Science Foundation Graduate Research Fellow, *2021–2026*

University of Wisconsin-Eau Claire *3.99/4.0, summa cum laude, May 2021*

- **B.S.**, Computer Science
- **B.A.**, English, Rhetorics of Science, Technology, and Culture
- **Minor**, Mathematics

Relevant Experience

Undergraduate Researcher, Carnegie Mellon University's REUSE Program *June 2020 - May 2021*

Mentors: Dr. Bob Iannucci, Dr. Jonathan Aldrich

- Explored and prototyped a novel software repository system for the TickTalk programming language to allow mixing and matching disjointly-versioned software modules.
- Implemented a networking layer in Python to support an autonomous vehicle intersection that won 2nd place in the 2021 CPS-IoT Week's Student Design Competition. In this scenario, two miniature cars communicated with roadside sensor units to avoid collisions as they traveled through a mock intersection.

Undergraduate Researcher, University of Wisconsin-Eau Claire *September 2019 - March 2021*

Mentor: Dr. 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 JS, and deployed both as a web app using WebAssembly for interoperation.

Technology Intern, Travelers Insurance, St. Paul, Minnesota *June - August, 2019*

- 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 the onboarding and provisioning processes and used Angular to create a wireframe application that would improve the experience for new hires.

Publications

Preprints

- Jenna DiVincenzo, **Ian McCormack**, Hemant Gouni, Jacob Gorenburg, Mona Zhang, Conrad Zimmerman, Joshua Sunshine, Éric Tanter, Jonathan Aldrich. "Gradual C0: Symbolic Execution for Efficient Gradual Verification." arXiv:2210.02428. October 5th, 2022.

Conference Papers

- **Ian C. McCormack**. "A Software Library Model for the Internet of Things." In: *Companion Proceedings of the 2020 ACM SIGPLAN International Conference on Systems, Programming, Languages, and Applications: Software for Humanity (SPLASH Companion '20)*, November 15–20, 2020, Virtual, USA.

Artifacts & Demonstrations

- Reese Grimsely, Edward Andert, **Ian C. McCormack**, Eve Hu, Bob Iannucci. "One Program to Rule the Intersection". In: *CPS-IoT Week, Student Design Competition: Networked Computing on the Edge*, 2021. Won 2nd place. `https://www.youtube.com/watch?v=f5HHljXT6DY`
- **Ian C. McCormack**, Chris Johnson. "Direct Manipulation and SVG: Creating and Adjusting Graphics Programmatically and Visually." In: *FabLearn 2020*, Demonstration, October 10–11, 2020, Virtual, USA.