

# ETHAN MCCARTHY


 [ethmcc.github.io](https://ethmcc.github.io)

 [in/ethmcc](https://in/ethmcc)


 [ethmcc](mailto:ethmcc)

## EMPLOYMENT

### Software Developer


 2021 – present

 **Two Fish Creative**

 West Palm Beach, Florida

Building full-stack enterprise web applications in Python and JavaScript.

### Software Development Intern


 2020 – 2021

 **Skillion Inc.**

 Bethlehem, Pennsylvania

Developed full-stack web (React) and Android apps for an e-bike platform. Led development of “Tours” software project. AWS IoT platform. JUnit testing. Scrum/Agile development with Jira.

### Visiting Assistant Professor

 2018 – 2020

**University of Florida**

 Gainesville, Florida

Developed lecture video sequence with interactive online animations and demonstrations. Contributed to in-house textbooks. Converted courses for online-delivery. Led research seminars and conferences.

### Graduate Teaching Assistant **University of Wisconsin–Madison**

 2012 – 2018

 Madison, Wisconsin

Led recitations in undergraduate mathematics courses. Developed curriculum content. Led and trained other teaching assistants.

### Undergraduate Teaching Assistant **Michigan State University**

 2010–2012

 East Lansing, Michigan

Led the recitation sections for a terminal undergraduate math course. Assisted in tutoring center.

## PERSONAL PROJECTS

Full descriptions of my programming portfolio projects are available at this link: <https://ethmcc.github.io/projects/>

### Weather Journal

 [ethmcc.github.io/weather](https://ethmcc.github.io/weather)

- Native Android application written in Java

Allows users to keep a journal on weather conditions. Interfaces with location and file system, external web weather API, SQLite database.

### Turing Machine Simulator

 [ethmcc.github.io/turing](https://ethmcc.github.io/turing)

- Progressive web app built with React, JavaScript

Simulator with source code parser. Allows users to write their own machines using a custom syntax. Deployed in an educational setting.

### DLX Multiset Multicover package [ethmcc.github.io/sudoku](https://ethmcc.github.io/sudoku)

- Python package implementing efficient combinatorial algorithms

Fast library for solving combinatorial problems, especially variant sudoku, using an implementation of Knuth's DLX algorithm.

### Pomoduino timer

 [ethmcc.github.io/pomoduino](https://ethmcc.github.io/pomoduino)

- A time management clock for Arduino-compatible microcontrollers
- Pomodoro timer built from a microcontroller and a 16-pin LCD module. Programmed in C++ on the Arduino platform.

## EDUCATION

### Ph.D. Mathematics

**UW–Madison**

 2018

 Madison, Wisconsin

**Supervisor:** Prof. Joseph S. Miller

**Research topics:** Theory of computation, computability and complexity, computer science, algorithmic information theory and randomness.

### M.A. Mathematics

**UW–Madison**

 2014





 Madison, Wisconsin





**Specialty topic:** Martin–Löf-random paths of Brownian motion.





## OTHER EXPERIENCE





- *Art of Problem Solving*. “Halper” and Grader. *Intro to Programming with Python*, *Intermediate Programming with Python*.




## TECHNICAL SKILLS



 Python  C++  C  JavaScript

 Java  MATLAB  Numpy  Testing

 Scrum  Agile  Jira  Android

 React  AWS  AWS IoT  SQL

 MongoDB  Computer Science  OOP

 Functional Programming  Algorithms

## SELECTED PUBLICATIONS

- *Pointwise complexity of the derivative of a computable function*. Arch. Math. Log. (2021). DOI: f7ms
- *Cototal enumeration degrees and their applications to effective mathematics*. Proc. Am. Math. Soc. 146 (2018). DOI: f7mt

## SELECTED AWARDS

- Graduate Research Fellowship, NSF, 2014
- Herbert T. Graham Scholar, 2011 & 2012
- Math in Moscow Scholarship, AMS, 2012
- Herzog Mathematical Competition, 1st Prize, 2011

## OTHER INTERESTS

- **Sailing:** Instructor at UW Hoofers student sailing program.