ETHAN MCCARTHY

ethmcc.github.io in/ethmcc ethmcc

EMPLOYMENT

Software Development Intern — Skillion Inc.
2020 – 2021 | 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 — University of Florida
2018 – 2020 | 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
- 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
- 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
- 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
- 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*. To appear in Arch. Math. Log. (2021)
- *Cototal enumeration degrees and their applications to effective mathematics*. Proc. Am. Math. Soc. 146 (2018), 3541—3552.

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.