

Curriculum Vitae: Madeline Endres

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Education:

- PhD Student, Computer Science Engineering: University of Michigan, 2018-Present
 - Adviser: Westley Weimer
 - Research Interests: Software Engineering, Program Comprehension, Education
 - First-year Fellowship
- Bachelor of Science: University of Michigan, Class of 2018 – GPA: 3.95
 - Computer Science, College of Literature, Science, and the Arts
 - Jean Fairfax Scholar (4-year merit scholarship)
- Bachelor of Music in Cello Performance: University of Michigan, Class of 2018 – GPA: 3.95
 - School of Music Merit Scholar (4-years merit scholarship)
 - Charlie & Nancy B. Sunday Scholar (4-year merit scholarship)

Research Statement:

Broadly, my research is at the intersection of Software Engineering and Human Factors. In particular, I am interested in reducing computing barriers for both novice and expert programmers, especially through the lenses of code-comprehension, education, and diversity. My recent work involves providing hints to novice programmers by using a novel template-based automatic program repair algorithm to fix erroneous *inputs* for unique novice programs. Work on this project was recently submitted to a top-tier Software Engineering conference.

Papers and Publications:

- Madeline Endres, Benjamin Cosman, Georgios Sakkas, Ranjit Jhala, and Westley Weimer:
InFix: Automatically Repairing Novice Program Inputs: Under review for ASE 2019

Research and Relevant Work Experience:

- PhD Researcher in Weimer Research Group: University of Michigan (Fall 2018 - Today)
 - Experience building software tools, running empirical experiments, and conducting IRB approved human studies
- Full-time Summer Intern at MITRE, a Federally Funded Research and Development Center (FFRDC) (May 2017 - August 2017)
 - Worked on various research and data analysis projects, many classified

- Awarded a MITRE Special Recognition Award for work on TIREM (Terrain Integrated Rough Earth Model)
 - TIREM estimates radio propagation loss between points on a spherical earth with rough terrain
 - Designed experiments exposing inconsistencies in legacy versions of TIREM and implemented a new version that fixed the inconsistencies and improved efficiency
- Programming Languages Course Development Directed Study under Dr. Amir Kamil (Winter 2017)
 - Analyzed and interpreted data collected from EECS 490: Programming Languages in Fall 2016, the first semester that it was taught in 10 years
 - Developed an improved syllabus for EECS 490, created additional projects and assignments, and edited course notes
 - Determined requirements for a permanent autograder and implemented projects tests

Academic Teaching Experience:

- Engineering Teaching Consultant (Fall 2019 - Present)
 - Provides teaching feedback for University of Michigan engineering instructors
- Facilitator for Diversity, Equity, and Inclusion Seminars (Winter 2019)
 - Facilitated four out of eight seminars
 - Helped develop instructional material for all four seminars
- Instructional Aide for EECS 481: Software Engineering (Winter 2018)
 - Conducted office hours, and helped grade exams
- Instructional Aide for EECS 490: Programming Languages (Fall 2017)
 - Conducted office hours, and helped write and grade exams
 - Taught weekly discussion section
- Instructional Aide for EECS 203: Discrete Mathematics (Spring 2017)
 - Conducted office hours, and helped write and grade exams
- Instructional Aide for EECS 280: Programming and Introductory Data Structures (Winter 2017)
 - Conducted office hours , and helped write and grade exams
 - Taught weekly discussion section
- Instructional Aide for EECS 490: Programming Languages (Fall 2016)
 - Experienced building a course taught for the first time in 10 years
 - Wrote scripts forming the architecture of the new course, including grading scripts
- Student Instructor for MiBytes Summer Computer Camp (Summer 2016)
 - Developed a course introducing high school students to C++ programming
 - Gained further experience with Android development and Arduino

- Instructional Aide for EECS 281: Data Structures and Algorithms (Spring 2016)
 - Conducted office hours , and helped write and grade exams
 - Taught weekly discussion section
- Instructional Aide for EECS 183: Elementary Programming (Fall 2014 – Spring 2016)
 - Taught weekly discussion section
 - Conducted office hours, helped write exams and administrative scripts
 - Documented the EECS 183 autograder (Summer, 2015)

Other Work Experience:

- Various musical paid performance opportunities as a cellist (2013 - Present)
- Business Management Intern, Anchorage Opera (Summer 2014)

Academic Awards and Achievements:

- Member of Phi Beta Kappa Honor Society (2017)
- MITRE Special Recognition Award (2017)
- EECS Scholar Award, University of Michigan (2017)
- 7 Semester James B. Angell Scholar (2017)
- EECS Scholar Award, University of Michigan (2016)
- William J. Branstrom Freshman Prize (2014)
- National Merit Scholar (2013)

Course Highlights:

- Research Methods in Computer Science Education (Winter, 2019)
- Advanced Programming Languages (Fall, 2018)
- Programming Languages Directed Study (Winter, 2017)
- Computer Networks (Winter, 2017)
- Operating Systems (Fall, 2016)
- Machine Learning (Winter, 2016)

Other Relevant Skills and Certifications:

- DoD Secret Clearance Rating
- Significant Experience with C++, C, Python (both 2 and 3), Fortran77, PHP, LaTeX
- Familiarity with Bash, HTML/CSS, Markdown, ARM, Maple, Git, Arduino, Scheme, Linux, Java, Prolog, SQL, OCaml
- Experience successfully completing an IRB review and running a human study
- Conversational proficiency in French

References available upon request