Madeline Endres

Computer Science and Engineering • University of Michigan
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*using **software engineering** and **education** to **reduce computing barriers** for **novice and expert programmers***

Education

University of Michigan   *Aug. 2018 - Present*

PH.D IN COMPUTER SCIENCE ENGINEERING

- Adviser: Westley Weimer
- Passed Preliminary Examination, Sept. 2019
- Research Interests: *Software Engineering, CS Education, Program Comprehension*

University of Michigan   *Aug. 2013 - May 2018*

B.S. IN COMPUTER SCIENCE

- Computer Science, College of Literature, Science, and the Arts, GPA 3.96

University of Michigan   *Aug. 2013 - May 2018*

B.M. IN CELLO PERFORMANCE

- School of Music Theater and Dance, GPA 3.96

Publications

PUBLISHED CONFERENCE PAPERS [PEER-REVIEWED]:

Pablo: Helping Novices Debug Python Code Through Data-Driven Fault Localization   *SIGCSE 2020*

COSMAN, B., **ENDRES, M**., SAKKAS, G., MEDVINSKY, L., YAO-YUAN, Y., JHALA, R., CHAUDHURI, K., WEIMER, W.

- To appear at the 51st ACM Technical Symposium on Computer Science Education, Main Research Track

InFix: Automatically Repairing Novice Program Inputs   *ASE 2019*

ENDRES, M., COSMAN, B., SAKKAS, G., JHALA, R., WEIMER, W.

- 34th IEEE/ACM International Conference on Automated Software Engineering, Main Research Track

CONFERENCE PAPERS UNDER SUBMISSION TO PEER-REVIEWED VENUES:

Modeling Novice Performance on Iterative and Recursive Problems   *ITiCSE 2020*

ENDRES, M., WEIMER, W., KAMIL, A.

- 25th ACM Conference on Innovation and Technology in Computer Science Education, Main Research Track

Typer Error Feedback via Analytic Program Repair   *PLDI 2020*

SAKKAS, G., **ENDRES, M**., COSMAN, B., WEIMER, W., JHALA, R.

- 41st ACM SIGPLAN Conference on Programming Language Design and Implementation, Main Research Track

Fellowships

Total Awarded: **$82,500**

$40,000	Jean Fairfax Scholarship, 2014-2018
$40,000	Charlie & Nancy B. Sunday Music Departmental Merit Scholarship, 2014-2018
$2,500	National Merit Scholarship, 2013

Funding and Grants

Total Awarded: **$30,300**

$24,300   **University of Michigan, Center for Academic Innovation:** *Investigating Spatial Reasoning Training for Introductory Computing*. Responsibilities include writing the proposal, managing funds, and writing the report (2020)

$6,000   **University of Michigan, Center for Research on Learning and Teaching:** *Investigating Spatial Reasoning Training for Introductory Computing*. Responsibilities include writing the proposal, managing funds, and writing the report (2020)

Work and Relevant Experience

RESEARCH AND DEVELOPMENT

University of Michigan   *Ann Arbor, MI*
GRADUATE RESEARCH ASSISTANT   *Aug. 2018 - Present*
- Conducted research involving automatically repairing *inputs* to student programs
- Also investigating the relationship between spatial reasoning and CS performance
- Performed both qualitative and quantitative empirical studies examining novice programmer behavior

The MITRE Corporation   *Ann Arbor, MI*
COMPUTER SCIENCE INTERN   *May 2017 - Sep. 2017*
- Worked on various research, data analysis, and software development 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
  - Exposed inconsistencies in legacy versions of TIREM
  - Implemented fixed and more efficient version, saving MITRE an estimated $125,000

University of Michigan   *Ann Arbor, MI*
UNDERGRADUATE DIRECTED STUDY   *Jan. 2017 - May 2017*
- Collected student data from EECS 490 the first semester that it was taught in 10 years
- Analyzed data and used analysis to design homework and projects for future semesters
- Developed an improved syllabus and edited course notes

MANAGEMENT AND CONSULTING

University of Michigan   *Ann Arbor, MI*
ENGINEERING TEACHING CONSULTANT   *Aug 2019 - Present*

- Program affiliated with Michigan's Center for Research on Learning and Teaching in Engineering
- Provides one-on-one teaching consultations with instructors
- Facilitates workshops on research-based best teaching practices

Anchorage Opera Company *Anchorage, AK*
BUSINESS MANAGEMENT INTERN *June 2014 - Aug. 2014*
- Managed ticket sales and helped restructure office organization

Teaching and Mentorship Experience _____

INSTRUCTIONAL ASSISTANT, UNIVERSITY OF MICHIGAN

EECS 481, Software Engineering	*Winter 2018*
EECS 490, Programming Languages	*Fall 2016, Fall 2017*
EECS 203, Discrete Mathematics	*Spring 2017*
EECS 280, Programming and Introductory Data Structures	*Winter 2017*
EECS 281, Data Structures and Algorithms	*Spring 2016*
EECS 183, Elementary Programming	*Fall 2014, Winter 2015, Fall 2015, Winter 2016*

ACADEMIC GUEST LECTURES

Diversity and Barriers To Success *Fall 2019*
- EECS 398 (Practical Techniques for Teaching Computing), University of Michigan

UNDERGRADUATE MENTEES

Annie Li *Winter 2019 - Present*
Mentored and collaborated on a project involving measuring the effects of spatial training on the cognitive processes of beginning programmers using fNIRS and behavioral metrics.

Anne Fitzpatrick (UMich' 2020) *Winter 2019*
Mentored and collaborated on a project involving measuring the effects of spatial training on the cognitive processes of beginning programmers using fNIRS and behavioral metrics.

Serena Chan (UMich' 2020, moved on to Google) *Winter 2019*
Mentored and collaborated on a project involving measuring the effects of spatial training on the cognitive processes of beginning programmers using fNIRS and behavioral metrics.

Service _____

WORKSHOP DESIGNER AND FACILITATOR

Facilitating Group Work to Maximize Learning (University of Michigan) *Winter 2020*
- Workshop included in Michigan's biannual required training for all new instructional assistants

Diversity, Equity, and Inclusion Seminars (University of Michigan) *Winter 2019*
- Required seminar for 100 EECS Instructional Assistants
- Facilitated 4/8 seminars

COMPUTER SCIENCE K8-12 OUTREACH

Girls Who Code *Ann Arbor, MI*
GUEST LECTURER *Nov. 2018*

- Gave talk on experiences as a CS researcher to high school girls learning to code

7 Mile Coding *Detroit, MI*
COMPUTER SCIENCE TEACHER *Jan 2018 - April 2018*
- University of Michigan club that provides free coding lessons for youth
- Helped design and taught coding activities for middle schoolers

MiBytes *Ann Arbor, MI*
COMPUTER SCIENCE INSTRUCTOR *June 2016 - July 2016*
- Taught three week coding summer day camp for high schoolers (grades 9 - 12)
- Developed a course introducing students to C++ programming
- Helped students develop android apps using MIT App Inventor and Scratch

Technical Skills _____

Programming	Python, C/C++, PHP, Fortran77, SQL, LaTeX, HTML
Research	Qualitative and Quantitative analysis, Mixed Methods, IRB Experience, Empirical Evaluation
Other	Intermediate French conversational proficiency, DoD Secret Clearance (2017), Performing Cellist

Honors and Awards _____

- 8 semester James B. Angell Scholar - awarded to 25/5,000 Michigan seniors (2018)
- Phi Beta Kappa Honor Society (2017)
- MITRE Special Recognition Award for saving $125,000 (2017)
- EECS Scholar Award, University of Michigan (2016, 2017)
- William J. Branstrom Freshman Prize - top 5% of freshman class (2014)
- National Merit Scholar (2013)

References available upon request