Abigail K. Julian

Emory University
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EDUCATION

Emory University   Atlanta, GA
PhD Student, Computer Science and Informatics
Graduate Research Fellow, National Science Foundation
Women in Natural Sciences Fellow, Laney Graduate School
Advisor: Lars Ruthotto

Vanderbilt University   Nashville, TN
B.A., Mathematics (Honors Track), Computer Science, Spanish   Spring 2019
Magna Cum Laude

RESEARCH
PROJECTS

Deep Learning for Higher Resolution MRI Images   2020-Present
Using deep learning to train an efficient and effective tool for
generating accurate and high-resolution human brain images from
EPI MRI scans. Leveraging the physical structure of distortion
artifacts to generate higher resolution images. Incorporating tools
from image registration, optimal transport, and GPU computing.

Towards Student Mastery in Introductory Computer Science   Summer 2020
Leveraged recent advances in Deep Knowledge Tracing along with
years of student data from Emory's introductory programming
course to predict student mastery of basic programming concepts.
Developed software to transform a student submission that does not
compile into code able to be parsed into a syntax tree in order to
calculate the distance from a correct solution.

Real-Time Study Feedback for First-Year Medical School Anatomy   Spring 2019
Advised medical students building a data-gathering Python plugin
for the Anki flashcard platform, allowing professors access to real-
time study data. Ran a pilot experiment with first-year anatomy
students.

Computational Sustainability and Place-Based Storytelling   Summer 2018
Collaborated with a team of undergraduates to develop an artificially
intelligent place-based storyteller in Python for sustainability
awareness. Created functionality to introduce and provide context for
stories found online. Investigated ways of characterizing and
measuring relevance between a place and a text.

Election Control Algorithmic Complexity   2017-2018
Worked on an independent study algorithmic complexity project.
Wrote a literature review on election control algorithms research.
Proved election control by manipulating votes at a set of districts is
NP-Hard.

CONFERENCE PROCEEDINGS	Fisher, D, Markert, E., <u>Roberts, A</u>., & Varma, K. (2019). "Region Radio: An AI that Finds and Tells Stories about Places". *Proceedings of the 10th International Conference on Computational Creativity* (pp. 336-340).
POSTERS	A. Rees, M. Naguib, <u>A. Roberts</u>, and B. Pearson. "Using Anki to Provide Real-Time Learning Feedback in First-Year Anatomy." Presented at *AMA ChangeMedEd 2019.* September 2019.
	E. Markert, <u>A. Roberts</u>, K. Varma, and D.H. Fisher. "Region Radio: An Artificially Intelligent Story Teller about Conservationism." Presented at *2018 Doctoral Consortium on Computational Sustainability.* September 2018.

TEACHING

Instructor of Record, Introduction to Computer Science II   Spring 2020
Emory University, CS 171
Planned and delivered twice-weekly 75-minute lectures to 40 students. Held office hours to aid students in understanding. Responsible for creating quizzes, assignments, and exams. Transitioned course to a remote environment due to COVID-19 pandemic.

Graduate Teaching Assistant, Introduction to Computer Science   Fall 2019
Emory University, CS 170
Assisted Instructor of Record with questions and debugging in lecture. Held office hours to aid students in understanding. Responsible for grading homework and quizzes. Proctored weekly quizzes.

Undergraduate Teaching Assistant, Survey of Calculus   Fall 2018, Spring 2019
Vanderbilt University, MATH 1100
Instructed weekly recitation sections of 15 students. Presented class material in alternate ways to improve student understanding. Responsible for grading quizzes and exams. Held weekly office hours.

HONORS & AWARDS	Graduate Research Fellow, National Science Foundation	2021-2024
	Women in Natural Sciences Fellow, Emory University	2019-2024
	Dean's List, Vanderbilt University	8 Semesters, 2015-2019
ACTIVITIES	Computer Science and Informatics Program Student Ambassador	2019-Present
	Student Member, Society for Industrial and Applied Mathematics	2020-Present
	Member, Center for the Integration of Research, Teaching, and Learning	2019-Present
	Computer Science and Informatics Curriculum Task Force Member	Fall 2020

SKILLS

Programming Languages
Python (including NumPy and PyTorch), C++, C#, C, SQL, Java, MATLAB

Foreign Languages
Fluent in Spanish, Elementary French

Training and Certificates
"Advancing Learning Through Evidence-Based Teaching" certificate with distinction (Center for the Integration of Research, Teaching, and Learning, Spring 2020)