

Madeline Potter

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Education

Doctor of Philosophy, Computer Engineering; 4.0/4.0 GPA
University of Alabama in Huntsville

Expected May 2030
Huntsville, Alabama

Bachelor of Science, Computer Engineering; 3.96/4.0 GPA
University of South Alabama

May 2026
Mobile, Alabama

Experience

Graduate Research Assistant July 2026 – Present
University of Alabama in Huntsville Huntsville, AL

- Received a Graduate Research Assistantship to participate in research in autonomous robotics and controls theory in the Autonomous Cognition and Controls Laboratory
- Modified ROS2 and Python programs to enable simultaneous operation and coordination of two TurtleBot 4 Pros
- Conducted research on autonomous robotic systems with an emphasis on safe and effective operation in human environments
- Investigated control and autonomy methods for improving robot behavior and decision-making when operating around humans

NSF REU: Interdiscip. Research to Address Microplastics May 2025 – July 2025
University of South Alabama Mobile, AL

- Developed a microplastic monitoring system that uses a Raspberry Pi with various sensors to collect information about the environment and send it to a map for visualization
- Wrote a program that collected various environmental data using Python, a Raspberry Pi, Sense Hat, and SDS011 sensor
- Used Google Cloud to send and receive data from all connected Raspberry Pi, creating an IoT sensor network
- Participated in various team-building activities with the rest of the cohort to learn more about microplastics and their impact on the Gulf Coast region

Undergraduate Research Assistant April 2023 – May 2026
University of South Alabama Mobile, AL

- **Structral Graph Theory**: developed fast and efficient multiprocessed programs with Python, C, C++, CUDA, and Mathematica for finding different properties of graphs
- **Computer Vision Group**: developed various object detection and classification models that detected breast cancer in histopathology images using Python and PyTorch
- **IMPACT Lab**: developed various classification models that detected colorectal cancer in hyperspectral images of mouse tissues using Python and PyTorch
- **JAGSAT-II**: researched connector and cabling systems and assisted with calibrating the ground station using DipTrace and PuTTY

Extracurriculars and Honors

NASA Space Grant Scholar

August 2024 – May 2026

- Received the Alabama Space Grant Consortium (ASGC) in 2024-2025 and 2025-2026, a competitive grant awarded to students in Alabama for participation in STEM research
- Completed an outreach program for K-12 students, designed to show the opportunities available and encourage participation in STEM research

Engineering Ambassador

August 2024 – May 2026

- Represented the University of South Alabama College of Engineering by participating in events that showed K-12 students what the College of Engineering has to offer

Honors College

August 2022 – May 2026

- A competitive program that offers additional challenging classes, participation in research, and community service opportunities, while maintaining a 3.5 or higher GPA
- Honors Thesis: *Deep Learning Based Detection of Breast Cancer in High Resolution Ultrasound and Histopathology Images*

Skills

Programming: Python, Bash, C, C++, CUDA, GDScript, MATLAB/Octave, Visual Basic, Mathematica, HTML/CSS/JavaScript

Software/Hardware: DipTrace/KiCad, PuTTY, Wireshark, PyTorch, Raspberry Pi, Arduino, Linux

Publications

Journal Articles:

1. A. Pavelescu, E. Pavelescu, M. Potter, "New minor minimal non-apex graphs," *arXiv*, 3 Apr. 2026, doi: 10.48550/arXiv.2604.03433.
2. J. Song et al., "Advances in microplastic detection and interception: A state-of-the-art review," *Cleaner Water*, vol. 4, p. 100141, Dec. 2025, doi: 10.1016/j.clwat.2025.100141.

Conference Posters:

1. M. Potter, J. Wang, S. Wu, "Wireless Real-Time Microplastic Monitoring System," presented at *ASME IMECE 2025*, Memphis, TN, USA, 19 Nov. 2025.
2. M. Potter, I. Arnold, R. Tang-Holmes, T. Rich, S. Leavesley, N. Gong, "Fluorescence Excitation-Scanning Hyperspectral Imaging with AI for Colorectal Cancer Detection in Mice," presented at *NCUR 2025*, Pittsburgh, PA, USA, 8 Apr. 2025.
3. M. Potter, N. Gong, J. Wang, "Colorectal Cancer Detection in Mice Using Artificial Intelligence," presented at the *Univ of South Alabama Undergraduate Research Symposium*, Mobile, AL, USA, 23 Oct. 2024.

Conference Presentations:

1. M. Potter, N. Gong, J. Wang, "Colorectal Cancer Detection in Mice Using Artificial Intelligence," presented at the *Univ of South Alabama Undergraduate Research Symposium*, Mobile, AL, USA, 23 Oct. 2024.