Maria Clare Lusardi

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Education

University of Illinois   Champaign-Urbana, Illinois
PhD in Computer Science   *Aug 2023 – May 2028 (Anticipated)*
   Thesis Focus: Enhancing human robot collaboration for assistive robotic devices.

University of Missouri   Columbia, Missouri
BS in Computer Science, GPA:4.0   *Aug 2019 – May 2023*

Publications

In Submission

John Pohovey, **Maria Lusardi**, Aamir Hasan, Shuijing Liu, Andre Schreiber, Samuel Olatunji, Wendy A. Rogers, Katherine Driggs-Campbell. "Beyond Canes and Guide Dogs: The Status of Robotic Solutions for Wayfinding, Navigating, and Orienting the Visually Impaired." (Anticipated 2025).
- In submission with ACM Transactions on Human-Robot Interaction (T-HRI).

Published

Maria Lusardi, Mimi Trinh, Jude Chinyere Okoro, Yao-Lin Tsai, John Pohovey, Anjali Ramesh, Samuel Olatunji, Wendy Rogers, Katherine Driggs-Campbell. "Potential for Robots to Assist People with Vision Impairments with Orientation and Mobility." (2025).
- Presented at Human Factors and Ergonomics in Health Care International Symposium (HFES) in 2025.

Stav Ashur, **Maria Lusardi**, Marta Markowicz, James Motes, Marco Morales, Sariel Har-Peled, and Nancy M. Amato. "SPITE: Simple Polyhedral Intersection Techniques for modified Environments." (2024).
- Presented at the 40th Anniversary of the IEEE International Conference on Robotics and Automation (ICRA@40) in 2024.
- Presented at the Workshop on the Algorithmic Foundations of Robotics (WAFR) in 2024.

Har-Peled, Sariel, and **Maria C. Lusardi**. "Dependable Spanners via Unreliable Edges." (2024).

Lusardi, Maria Clare, Isaac Dubovoy, and Jeremy Straub. "Determining the Impact of Cybersecurity Failures During and Attributable to Pandemics and Other Emergency Situations."(2020).
- Presented in the IEEE Applied Imagery Pattern Recognition Workshop (AIPR) in 2020.

Research Projects

Air Force Research Laboratories Autonomous Vehicles Lab   Eglin AFB, Fort Walton Beach, Florida
Research Intern   *May 2025 – Aug 2025*
- Investigating how knowledge of other agents' intent impacts the performance of hierarchical reinforcement learning (HRL) by implementing HRL in a cooperative/adversarial environment using the PyQuaticus Capture-the-Flag simulation and Ray RLlib.

Wayfinding Assistant: WayBot   Champaign-Urbana, Illinois
Graduate Research Assistant   *Jan 2024 – Present*
- Investigating vibrotactile haptic effects to communicate spatial information to people with visual impairments (PwVI) by conducting user studies with PwVI using a custom 3D printed handle with embedded vibrotactile motors from Titan Haptics attached to the Stretch robot from Hello Robot.
- Determined key features necessary for an orientation and mobility assistive device for PwVI by conducting and analyzing interviews of orientation and mobility specialists.
- Identifying strengths and limitations of current research into robotic assistive devices for PwVI by co-authoring a literature review of research on the topic from 1984 to the present.
- Expanded participation in assistive device research by mentoring two undergraduates for a summer in developing features to integrate the Stretch robot with a vibrotactile handle.

SPITE Dynamic Roadmaps   Champaign-Urbana, Illinois
Graduate Research Assistant   *Oct 2023 – Oct 2024*
- Validated the SPITE dynamic roadmap update method by creating and running experiments against existing roadmap update methods and single query methods.
- Improved availability of dynamic roadmap update methods by assisting with implementation of the SPITE algorithm into the Parasol Planning Library.
- Demonstrated real-world feasibility by implementing trajectories planned in simulation on a 6 Degrees of Freedom UR5e manipulator robot.
- Disseminated this work by presenting a poster at the IEEE International Conference on Robotics and Automation (ICRA@40) in 2024.

Bio-Informatics in Plant Science   Columbia, Missouri
Undergraduate Research Fellow   *Aug 2020 – May 2021*
- Evaluated pH sensors suitable for plant-science experiments by analyzing the consistency of readings from several different sensor brands using RShiny.
- Obtained more complete data from pH monitoring experiments by creating a system for autonomous recording of pH data with a Raspberry Pi.
- Streamlined the setup of plant-science experiments by providing thorough sensor documentation for non-specialists.
- Presented research at the Undergraduate Research Forum in written, poster, and video formats and won Best Abstract in spring 2021.

Cybersecurity Research Experience for Undergraduates   Fargo, North Dakota
Undergraduate Research Fellow   *Jun 2020 – Aug 2020*
- Predicted the cyber-attacks a network would face in a pandemic by identifying factors affecting the rate of cyberattacks and modeling how they would change based on pandemic conditions by creating a simulator system using C.
- Authored a research paper, *Determining the Impact of Cybersecurity Failures During and Attributable to Pandemics and other Emergency Situations,* and presented it at the 2020 IEEE AIPR conference.

Teaching/Leadership

Girls Who Code   Champaign-Urbana, Illinois
Volunteer Facilitator   *Feb 2025 - Present*
- Expand participation in computing by mentoring middle and high school students in creating their own computing projects

University of Illinois Siebel School of Computing   Champaign-Urbana, Illinois
Teaching Assistant   *Aug 2024-May 2025*
- Supplemented a systems programming class by giving short lectures and providing one-on-one programming assistance in weekly labs.
- Collaborated on developing course content for labs and implementing active learning strategies.
- Assisted with maintenance of course infrastructure by developing Docker containers for components of the website and automatic grader.

University of Missouri Department of Computer Science   Columbia, Missouri
Peer Learning Assistant   *Aug 2021-Dec 2021*
- Facilitated an entry-level programming course by grading assignments and providing feedback for 45 students.
- Promoted independent problem solving by providing one-on-one assistance to students in weekly office hours.

Student Underwater Robotics Foundation, *Co-President*   *Apr 2020 – May 2023*
- Led the software team to develop an autonomous submarine which qualified at the 2022 RoboSub competition using ROS, Python, and C/C++.
- Assisted with recruitment and increased foundation membership from 3 to 24 by making connections with other student clubs and speaking at freshmen level classes.

- Disseminated technical descriptions of the submarine and submitted to the 2020 and 2021 RoboSub competitions in paper and video formats.

Work

CrowdStrike	Minneapolis, Minnesota
Software Engineering Intern	*June 2022-Aug 2022*

- Enabled further insight into Windows Defender tampering by investigating the impact of manipulating system environment variables and programming detection logic as a component of the CrowdStrike Falcon Sensor.

Caterpillar	Peoria, Illinois
Engineering Intern	*May 2021-Aug 2021*

- Researched the impact of sensor specifications on error in inertial measurement units (IMU) by simulating the effect of four kinds of stochastic and deterministic error using equations for Gauss-Markov noise and Kalman Filters in MATLAB

Academic Honors and Awards

NSF GRFP Honorable Mention	*Apr 2025*
College of Engineering High Dean's List	*Dec 2019 – May 2023*
Outstanding Award for Abstract Writing	*Apr 2021*
Mark Twain Scholarship	*Aug 2019 – May 2023*
Discovery Fellows	*Aug 2020 – May 2021*