Scott Mayberry

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Education

Ph.D., Robotics, *Georgia Institute of Technology* **Exp. June 2025**
B.S., Mechanical Engineering, *Massachusetts Institute of Technology* **June 2018**

Experience

Georgia Tech Systems Research Laboratory **Sep 2020 – Present**
Graduate Research Assistant *Atlanta, GA, USA*

- Conducted research in distributed robotics, filtering, and underwater communication/networking.
- Constructed advanced estimation methods for distributed robotics systems leveraging constrained Kalman filters.
- Developed robotic systems for distributed sensing, control, and communication in unknown environments.

Advanced Robotics and Analytics, Ford Motor Company **Sep 2018 – Sep 2020**
Robotics Research Engineer *Dearborn, MI, USA*

- Designed and implemented robotic systems for automotive assembly applications.
- Developed analytics pipelines to optimize robotic performance and reduce production costs.
- Generated unique IP focused on distributed robotics in manufacturing environments.

Select Publications (10 Patents, 11 Publications)

S. Mayberry, Z. Zhang, and F. Zhang, "Distributed cascaded cooperative Kalman filter soft constrained by unknown advection-diffusion PDE for mobile sensor networks," *IEEE Robotics and Automation Letters*, 2025. Submitted.

Z. Zhang, **S. T. Mayberry**, W. Wu, and F. Zhang, "Distributed cooperative Kalman filter constrained by advection–diffusion equation for mobile sensor networks," *Frontiers in Robotics and AI*, vol. 10, Jun. 2023. **DOI**: 10.3389/frobt.2023.1175418.

S. Mayberry, J. Cai, and F. Zhang, "BlueBuzz, an open-source acoustic modem," *OCEANS 2022, Hampton Roads, IEEE*, Oct. 2022, pp. 1–7. **DOI**: 10.1109/OCEANS47191.2022.9977326.

S. Mayberry, R. Sohmshetty, and S. Hoff, "Decentralized location determination systems and methods," *U.S. Patent 11 417 015 B2*, Aug. 2022.

Robotic Systems & Tools

Miniature Underwater Robot (MUR), 2025: Developed a miniature underwater robot with modular hardware for navigation and control. Enabled open-source accessibility to support broader research.

Marine Automatic Swarm Experiment Platform (MASEP), 2024: Developed a low-cost testbed for evaluating underwater controllers, communication, and multi-robot tracking with fused visual and onboard localization.

BlueBuzz Acoustic Modem, 2022: Developed an open-source underwater acoustic modem for robust, low-power communication. Presented findings at OCEANS 2022 to advance underwater robotics tools.

Optical Communication Modem, 2023: Designed a high-speed underwater optical modem to enhance communication range and reliability. Integrated the modem into field-deployed robotics systems.

Technical Skills

Programming & Tools: Python, C, C++, MATLAB, LaTeX, Docker, Git, CAD
Robotics & Control: ROS, PID, Kalman filtering, SLAM, sensor fusion, distributed systems
Embedded & Hardware Systems: PCB design, microcontrollers, embedded systems, SOCs, real-time systems
Machine Learning & Simulation: Reinforcement learning, CUDA, numerical methods, PDEs, FEM, FVM
Prototyping & Research: Rapid prototyping, 3D printing, machining, academic research, teaching, workshops

Teaching / Leadership

Georgia Tech Vertically Integrated Projects **Spring 2021 – Present**
Teaching Assistant *Georgia Institute of Technology, Atlanta, GA, USA*

- Mentored student teams in implementing robotics projects, emphasizing system integration and problem-solving.
- Led senior design teams with direct industry collaboration, ensuring alignment with real-world applications.

Awards & Fellowships

NSF Graduate Research Fellowship, 2022–2025: Nationally competitive fellowship supporting innovative research.
Ford Recognition Award, 2020: Recognized for novel design and implementation of an in-plant material delivery robot.
Ford Recognition Award, 2019: Recognized for exemplary teamwork on a UAV battery swapping prototype.
NCAA Academic All-American, 2015: Honored for academic excellence as a member of MIT Swimming.