Scott Mayberry, Ph.D. (June 2025)

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Education

June 2025 — **Ph.D., Robotics, Georgia Institute of Technology**, Atlanta, GA, USA
Lab: Georgia Tech Systems Research Laboratory (GTSR)
Advisor: Fumin Zhang, Ph.D.

June 2018 — **B.S., Mechanical Engineering, Massachusetts Institute of Technology**, Cambridge, MA, USA

Experience

Sep 2020 – Present — **Graduate Research Assistant**
Georgia Tech Systems Research Laboratory, Georgia Institute of Technology
Supervisor: Fumin Zhang, Ph.D.

Sep 2018 – Sep 2020 — **Robotics Research Engineer**
Advanced Robotics and Analytics, Ford Motor Company
Supervisor: Raj Sohmshetty

Sep 2016 – May 2017 — **Undergraduate Research Assistant**
Global Engineering and Research Lab, Massachusetts Institute of Technology
Supervisor: Amos Winter, Ph.D.

Fellowship

2022 – 2025 — **National Science Foundation Graduate Research Fellowship Program (NSF GRFP)**

Research Publications

Journal Articles

1. **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 for publication.
2. **S. Mayberry**, J. Cai, and F. Zhang, "MUR: Miniature Underwater Robot," *HardwareX*, 2025, Submitted for publication.
3. 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, ISSN: 2296-9144. DOI: 10.3389/frobt.2023.1175418.

Conference Proceedings

1. J. Cai, **S. Mayberry**, H. Zhang, and F. Zhang, "Development of desktop-size marine swarm research platform," in *OCEANS 2024 - Singapore*, IEEE, Apr. 2024, pp. 1–6. DOI: 10.1109/OCEANS51537.2024.10706637.
2. Z. Zhang, S. Chen, **S. Mayberry**, and F. Zhang, "Opinion-based strategy for distributed multi-robot task allocation in swarms of robots," in *2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, Oct. 2024, pp. 3476–3481. DOI: 10.1109/IROS58592.2024.10801579.

3. B. Ramachandran, **S. T. Mayberry**, and F. Zhang, "Acoustic localization of underwater robots: A time of arrival-based particle filter approach using asynchronous beacon pinging," in *2023 8th International Conference on Automation, Control and Robotics Engineering (CACRE)*, IEEE, Jul. 2023, pp. 294–299. DOI: 10.1109/CACRE58689.2023.10208534.

4. Z. Zhang, **S. T. Mayberry**, W. Wu, and F. Zhang, "Distributed cooperative kalman filter constrained by discretized poisson equation for mobile sensor networks," in *2023 American Control Conference (ACC)*, IEEE, May 2023, pp. 1365–1370. DOI: 10.23919/ACC55779.2023.10156161.

5. J. Cai, **S. Mayberry**, and F. Zhang, "First step towards low-cost, open-source optical modem for underwater communication with experimental results," in *The 16th International Conference on Underwater Networks & Systems*, ACM, Nov. 2022, pp. 1–2. DOI: 10.1145/3567600.3568157.

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

7. **S. Mayberry**, D. Dugaev, Z. Peng, J. Cai, and F. Zhang, "Demo: The integration of mu-net and bluebuzz acoustic modem," in *The 16th International Conference on Underwater Networks & Systems*, ACM, Nov. 2022, pp. 1–2. DOI: 10.1145/3567600.3570989.

8. **S. Mayberry**, J. Wang, Q. Tao, *et al.*, "First step towards unet: Open-access aquatic testbeds and robotic ecosystem," in *The 15th International Conference on Underwater Networks & Systems*, ACM, Nov. 2021, pp. 1–8. DOI: 10.1145/3491315.3491322.

Patents

1. D. J. Berels, M. Y. Ghannam, R. Roychowdhury, and **S. Mayberry**, "Independent conductive tape dispensing system for manufacturing of electrical distribution circuits in vehicles," U.S. Patent 11 872 774 B2, Jan. 2024 Link.

2. J. Cai, **S. Mayberry**, and F. Zhang, "MASEP: The marine automatic swarm experiment platform," U.S. Patent Application No. 63/631,583, 2024.

3. **S. Mayberry** and R. Sohmshetty, "Stackable battery assemblies and methods of use," U.S. Patent 12 010 805 B2, Jun. 2024 Link.

4. R. Roychowdhury, D. J. Berels, M. Y. Ghannam, and **S. Mayberry**, "System and method for circuit testing using remote cooperative devices," U.S. Patent 12 025 641 B2, Jul. 2024, Continuation of U.S. Patent 11 592 468 B2 Link.

5. R. Sohmshetty, **S. Mayberry**, V. Rajendra, and S. Hoff, "Stand-alone inspection apparatus for use in a manufacturing facility," U.S. Patent 11 879 751 B2, Jan. 2024 Link.

6. R. Sohmshetty, V. Rajendra, and **S. Mayberry**, "Systems and methods for ensuring privacy in an autonomous vehicle," U.S. Patent 11 960 621 B2, Apr. 2024 Link.

7. Y. Chen, R. Sohmshetty, J. Lu, and **S. Mayberry**, "Smartphone and battery integration module for an electric scooter," U.S. Patent 11 812 151 B2, Nov. 2023 Link.

8. **S. Mayberry**, D. Berels, M. Y. Ghannam, and R. Roychowdhury, "Dead reckoning correction utilizing patterned light projection," U.S. Patent 11 662 208 B2, May 2023 Link.

9. R. Roychowdhury, D. J. Berels, M. Y. Ghannam, and **S. Mayberry**, "System and method for circuit testing using remote cooperative devices," U.S. Patent 11 592 468 B2, Feb. 2023 Link.

10. D. J. Berels, J. Engels, **S. Mayberry**, G. K. Thomas, and M. V. Volpone, "Motor vehicle floor assembly with recesses for electrical lines and electrical modules," U.S. Patent 11 364 956 B2, Jun. 2022 Link.

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

12 **S. Mayberry**, "Systems and methods for predicting travel destination of an automobile based on attire worn by individual," U.S. Patent Application 2020/0249046 A1, Aug. 2020 Link.

Teaching Experience

Spring 2021 – Present
Teaching Assistant, Georgia Tech Vertically Integrated Projects
Georgia Institute of Technology, Atlanta, GA, USA
Instructor: Fumin Zhang, Ph.D.

Spring 2017 – Fall 2017
Project Team Leader, Design and Implementation of Hydrogen ICE
Massachusetts Institute of Technology, Cambridge, MA, USA
Instructor: Douglas Hart, Ph.D

Skills

Coding	Python, C, C++, MATLAB, Docker, LaTeX.
Robotics and Control	ROS, PID control, model-based control, data-driven control, distributed Kalman filtering, mobile sensor networks.
Embedded Systems	Low-level programming, microcontrollers, Arduino, Raspberry Pi, PCB design, multimeter data logging, underwater robotics.
Networking and Sensor Networks	Docker, sensor networking, reverse proxies, DHCP configuration, distributed systems for mobile sensors.
Machine Learning and AI	Reinforcement learning, machine learning techniques for control and estimation, CUDA programming, local AI servers.
SLAM and Mapping Techniques	Simultaneous Localization and Mapping (SLAM), camera fusion, and distributed localization methods.
CAD and Rapid Prototyping	CAD design, 3D printing, machining, turning, water jetting, laser cutting, and other manufacturing capabilities.
Data Analysis and Simulation	PDE simulation, numerical methods, FEM, FVM.
Additional Expertise	Academic research, teaching, workshop hosting, and LaTeX document preparation.

Awards

July 2020
Ford Recognition Award
Novel design and implementation of in-plant material delivery robot

Aug 2019
Ford Recognition Award
Exemplary diligence and team work in building a UAV battery swapping system prototype

May 2015
NCAA Academic All-American
MIT Swimming.

May 2022
Jefferson Park Chili Cookoff Campion

References

Available on Request