

Akshar Chavan

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EDUCATION

The Ohio State University Ph.D. in Electrical and Computer Engineering Dissertation: <i>Maximizing battery lifespan of autonomous systems</i> Advisor: Dr. Marco Brocanelli	Jan 2024 - Present (Exp. Summer 2026)
Wayne State University Ph.D. in Computer Science (<i>Transferred to The Ohio State University</i>) Advisor: Dr. Marco Brocanelli	Aug 2020 - Dec 2023
Wayne State University Masters in Industrial Engineering	Aug 2018 - May 2020
Saraswati College of Engineering, University of Mumbai B.E. in Mechanical Engineering	Aug 2011 - May 2014

RESEARCH INTERESTS

Energy-aware systems, autonomous systems, robotics, parallel and distributed systems, edge computing, and graph algorithms.

PUBLICATIONS

- [1] S. Fahmida, A. Chavan, P. V. Modekurthy, S. Abusayeed, and M. Brocanelli, “A Battery Lifespan-Aware Protocol for LPWAN,” in **Proceedings of the IEEE 44th International Conference on Distributed Computing Systems (ICDCS)**, Jersey City, NJ, USA, pp. 1050–1061, July 2024.
- [2] S. T. Atik, A. Chavan, D. Grosu, and M. Brocanelli, “A Maintenance-Aware Approach for Sustainable Autonomous Mobile Robot Fleet Management,” **IEEE Transactions on Mobile Computing**, vol. 23, no. 6, pp. 7394–7407, June 2024.
- [3] A. Chavan and M. Brocanelli, “Towards High-Quality Battery Life for Autonomous Mobile Robot Fleets,” in **Proceedings of the IEEE 3rd International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS)**, Virtual Conference, pp. 61–70, September 2022.

Papers Under Review and In Preparation

- [4] A. Chavan, S. Rabinia, D. Grosu, and M. Brocanelli, “Speeding-up Graph Algorithms via Clique Partitioning,” submitted to **Networks**, 2025; under revision.
- [5] A. Chavan, S. Rabinia, D. Grosu, and M. Brocanelli, “Speeding-up Graph Algorithms via Parallel Randomized Clique Partitioning”, submitted to **ACM Transactions on Parallel Computing**, 2025.
- [6] A. Chavan, S. T. Atik, and M. Brocanelli, “Battery Degradation-Aware Task Offloading in Edge-Assisted Mobile Computing,” submitted to **The 24th International Conference on Pervasive Computing and Communications (PerCom 2026)**.
- [7] A. Chavan, R. Joshi, and M. Brocanelli, “Safety Ensured Energy Management for Autonomous Robots”, to be submitted to **IEEE Transactions on Robotics**, expected submission January 2026.

PRESENTATIONS

Conference Presentations

1. A. Chavan and M. Brocanelli. **2022 IEEE International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS)**, Virtual Conference, September 2022
Towards High-Quality Battery Life for Autonomous Mobile Robot Fleets

Poster Presentations

1. A. Chavan, R. Joshi and M. Brocanelli. **2025 Edward F. Hayes Advanced Research Forum**, OSU, OH, USA, February 2025
Rethinking Energy Management for Autonomous Ground Robots on a Budget
2. A. Chavan, R. Joshi and M. Brocanelli. **2024 Kraus Memorial Poster Competition**, OSU, OH, USA, October 2024
Rethinking Energy Management for Autonomous Ground Robots on a Budget

Workshop Presentations

1. A. Chavan, and M. Brocanelli, **K-12 Outreach Program**, OSU, OH, USA, July 2024
Understanding Robot Perception: Lidar and its Applications

TEACHING EXPERIENCE

• The Ohio State University

Undergraduate Research Mentor

Aug 2025 – Present

Mentoring an undergraduate student completing a master's thesis on reinforcement-learning-based prediction of dynamic obstacles and their motion for real-time robotics applications.

Graduate Research Mentor

May 2024 – May 2025

Mentoring a graduate student on energy-efficient approaches for autonomous ground robots (AGR), including power-aware control, hardware prototyping, and experimental evaluation.

• Wayne State University, Detroit, MI, USA

Part-time faculty Instructor for Computer Operating Systems (CSC 4420) SET Score (out of 5): mean 3.8; std: 1.3; median: 4.0

Aug 2023 - Dec 2023

Graduate Teaching Assistant for Computer Operating Systems (CSC 4420)
Led lab sessions and graded assignments, quizzes, and exams for 30 students.

Aug 2022 - Dec 2022

• St. John College of Engineering and Management, Palghar, MH, India

Jun 2015 - May 2018

Lecturer, Department of Mechanical Engineering (Diploma in Engineering)

• Government Polytechnic, Thane, MH, India

Jan 2015 - May 2015

Visiting Lecturer, Department of Mechanical Engineering (Diploma in Engineering)

FELLOWSHIPS, AWARDS AND HONORS

- Thomas C. Rumble University Graduate Fellowship Award, Wayne State University. Aug 2023

PROFESSIONAL AFFILIATIONS

- ACM (Association for Computing Machinery)
- IEEE (Institute of Electrical and Electronics Engineers)

CERTIFICATIONS

- Advanced Driver Assistance Systems (ADAS) Jul 2025
- ACM Certified Reviewer Oct 2024

SERVICES

- **Reviewer**

- ACM Symposium on Theory of Computing (STOC), 2026
- IEEE International Conference on Cloud Engineering (IC2E), 2025
- IEEE International Conference on Edge Computing (EDGE), 2025
- IEEE International Conference on Systems, Man, and Cybernetics (SMC), 2025
- IEEE Transactions on Cloud Computing
- IEEE Transactions on Parallel and Distributed Systems

OTHER ACTIVITIES

- **Organizer - State-Level Presentation Competition** Jan 2018
Organized and led Presentania-2018, a state-level presentation competition with 64 teams from across Maharashtra, India.
- **Team Guide - (FKDC 2017 & 2018) Team Yunicorn** Jun 2016 - May 2018
Mentored the team throughout the competition, guiding design and testing.
Overall 1st place in FKDC - Season 2 (2018)
Overall 2nd place in FKDC - Season 1 (2017)
- **Team Manager (FORMULA STUDENT 2014) - Team Prahaar Racing** May 2013 – Feb 2014
Coordinated cross-functional teams to optimize vehicle performance, reduce delays, and improve time control.
- **Suspension Team Lead (SAEINDIA BAJA 2013) - Team Prahaar Racing** May 2012 – Feb 2013
Led the design and optimization of the suspension system, ensuring vehicle stability and performance on diverse terrains.

TECHNICAL SKILLS

- **Programming Languages:** Python (4+ years), C (2+ years), C++ (2+ years)
- **Robotics and Embedded Systems:** Robot Operating System (ROS) (Proficient in developing ROS nodes and packages, experience with Gazebo simulation), Arduino (Experience with microcontroller programming and sensor integration), Mobile Robotics (Experience with control algorithms and sensor integration for wheeled robots)
- **Machine Learning:** Keras, TensorFlow, Reinforcement Learning
- **Data Analysis and Visualization:** Pandas, NumPy, Matplotlib, Plotly
- **Version Control:** Git, GitHub
- **Shell Scripting:** Bash scripting, Linux terminal commands
- **High-Performance Computing:** Parallel computing (MPI, OpenMP), Job scheduling (Slurm)