Akshar Chavan

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EDUCATION

The Ohio State University Jan 2024 - Present (Exp. Summer 2026)
Ph.D. in Electrical and Computer Engineering
Dissertation: *Maximizing battery lifespan of autonomous systems*
Advisor: Dr. Marco Brocanelli

Wayne State University Aug 2020 - Dec 2023
Ph.D. in Computer Science *(Transferred to The Ohio State University)*
Advisor: Dr. Marco Brocanelli

Wayne State University Aug 2018 - May 2020
Masters in Industrial Engineering

Saraswati College of Engineering, University of Mumbai Aug 2011 - May 2014
B.E. in Mechanical Engineering

RESEARCH INTERESTS

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

PUBLICATIONS

[1] S. Fahmida, <u>A. Chavan</u>, 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, <u>A. Chavan</u>, 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] <u>A. Chavan</u> 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] <u>A. Chavan</u>, S. Rabinia, D. Grosu, and M. Brocanelli, "Speeding-up Graph Algorithms via Clique Partitioning," submitted to **Networks**, 2025.

[5] <u>A. Chavan</u>, 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] <u>A. Chavan</u>, 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] <u>A. Chavan</u>, 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. <u>A. Chavan</u> 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. <u>A. Chavan</u>, R. Joshi and M. Brocanelli. **2025 Edward F. Hayes Advanced Research Forum**, OSU, OH, USA, Feburary 2025
Rethinking Energy Management for Autonomous Ground Robots on a Budget

2. <u>A. Chavan</u>, 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. <u>A. Chavan</u>, 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 (AGRs), 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)	Aug 2023 - Dec 2023

  SET Score (out of 5): mean 3.8; std: 1.3; median: 4.0

Graduate Teaching Assistant for Computer Operating Systems (CSC 4420)	Aug 2022 - Dec 2022

  Led lab sessions and graded assignments, quizzes, and exams for 30 students.

- **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

- <u>Reviewer</u>

  - 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)