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

Computer systems for autonomous systems and vehicles; energy- and resource-aware mobile and edge computing; distributed and parallel systems for autonomy; **bio-inspired robotic platforms for embodied autonomous systems**; scalable graph and network 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 International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS)**, Virtual Conference, pp. 61–70, September 2022.

Manuscripts Under Review

[4] A. Chavan, R. Joshi, and M. Brocanelli, "Safety Ensured Energy Management for Autonomous Robots", submitted to **46th IEEE International Conference on Distributed Computing Systems (ICDCS)**, 2026.

[5] A. Chavan, S. Rabinia, D. Grosu, and M. Brocanelli, "Speeding-up Graph Algorithms via Clique Partitioning," submitted to **Networks**, 2025; *revision submitted*.

[6] A. Chavan, S. Rabinia, D. Grosu, and M. Brocanelli, "Speeding-up Graph Algorithms via Parallel Randomized Clique Partitioning", under revision for submission to **Journal of Parallel and Distributed Computing**, 2026.

[7] A. Chavan, S. T. Atik, and M. Brocanelli, "Battery Degradation-Aware Task Offloading in Edge-Assisted Mobile Computing," to be submitted to **IEEE Transactions on Mobile Computing**, 2026.

[8] E. Foorginejad, A. Chavan, and M. Brocanelli, "Runtime Control of Real-Time Object Detection Performance for Mobile and Embedded Systems," to be submitted to **The European Conference on Computer Vision (ECCV)**, 2026.

TEACHING EXPERIENCE

- **Wayne State University**, Detroit, MI, USA
  Instructor (Part-time Faculty), Computer Operating Systems (CSC 4420) Aug 2023 – Dec 2023
  SET Score (out of 5): median 4.0; mean 3.8

  Graduate Teaching Assistant, 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)

MENTORING EXPERIENCE

- **The Ohio State University**, Columbus, OH, USA

  Undergraduate Research Mentor Aug 2025 – Present
  Mentoring an undergraduate student completing a master's thesis on reinforcement-learning-based prediction of dynamic obstacles for real-time robotics.

  Graduate Research Mentor May 2024 – May 2025
  Mentored a graduate student on energy-efficient autonomous ground robots (AGRs), including power-aware control, hardware prototyping, and experimental evaluation.

PRESENTATIONS

Conference Presentations

- 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

- 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
- A. Chavan, R. Joshi and M. Brocanelli. **Kraus Memorial Poster Competition**, OSU, OH, USA, October 2024
  Rethinking Energy Management for Autonomous Ground Robots on a Budget

Workshop Presentations

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

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 Mobility: Operations, Services, and Technologies (MOST), 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
  - Elsevier Journal of Energy Storage

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)