Ahmed Y. **Nurye**

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Research Interest

My primary research interests lie at the intersection of robotics, AI, and mathematical human modeling. I work on developing models that help robots better understand human intent and adapt to changing environments through efficient, real-world learning. By combining ideas from machine learning, Bayesian inference, and reinforcement learning, I aim to improve how robots navigate and interact with their surroundings in a safe and intuitive way.

Education

Warsaw University of Technology — *Warsaw, Poland*

M.Sc. in Robotics and Automatic Control — *Oct. 2022 – Oct. 2024*

- Advisor: Prof. dr hab.inż. Elżbieta Jarzębowska
- Thesis: Mobile Robot Navigation in Dynamic Environments [PDF]

Addis Ababa Science and Technology University — *Addis Ababa, Ethiopia*

B.Sc. in Electrical Engineering — *Oct. 2016 – Sep. 2021*

- Advisors: Biruk Tadesse, M.Sc., and Mebaye Belete, M.Sc.
- B.Sc. Project: Smart Irrigation System Powered by Dual Axis Solar Tracker.

Publications

Google Scholar

† → Equal contribution

Conference Proceedings

C1. **Nurye, A.Y.** & Jarzębowska, E. *Deep Reinforcement Learning for Mobile Robot Navigation in Dynamic Environments* in *(in submission) 2025 29th International Conference on Methods and Models in Automation and Robotics (MMAR)* (2025).

Experience

Scania Group — *Gdańsk, Poland*

Systems Engineer — *Apr. 2024 – Present*

- Engineered requirements and implemented core BMS algorithms, such as hot-connection management and EU Battery Regulation compliance, to ensure system safety and regulatory conformance.
- Took part in end-to-end verification & validation of BMS functions to enhance software reliability and accelerate delivery cycles.

Northvolt — *Gdańsk, Poland*

Systems Engineer — *Apr. 2024 – Apr. 2025*

- Did comprehensive verification & validation of battery management system functions, identifying critical issues and ensuring adherence to performance specifications.
- Developed and deployed an automated code-generation toolbox that standardized system integration workflows and reduced manual implementation effort.

Warsaw University of Technology — *Warsaw, Poland*

Graduate Research Assistant | M.Sc. Thesis — *Mar. 2024 – Oct. 2024*

- Developed a ROS2 and Gazebo-based deep reinforcement learning navigation framework using the TD7 algorithm, integrating state–action representation learning for next-state prediction.
- Outperformed a TD3 baseline by reducing collision rate from 25% to 10% and improving average time-to-goal by 10% in scenarios with eight moving obstacles.
- Validated performance in three independent Gazebo simulation environments (open, static, dynamic), achieving 90% collision-free navigation in dynamic environments.

New Era Research and Development Center — *Addis Ababa, Ethiopia*

Research Intern — *Apr. 2021 – Jun. 2021*

- Worked on the design and implementation of a differential-drive robot.
- Developed and tested the robot's path-planning algorithms (bug, wavefront, line-follower).

Teaching

2022 **Introduction to Control System (*EEEg4155*)**, Teaching Assistant & Lab Instructor — *AASTU*
2021 **Electrical Measurement & Instrumentation (*EEEg3153*)**, Teaching Assistant — *AASTU*

Skills

Programming Python, C/C++, MATLAB/Simulink, Octave, Shell Scripting(bash)
Libraries PyTorch, Scikit-Learn, Gymnasium, Matplotlib, Numpy, Pandas, OpenCV
Other Tools Linux, ROS2, Gazebo, Git/GitHub, Docker, MS Office, LaTeX
Languages English, Amharic

Tools and Software

GitHub

Gym-Turtlebot: A Turtlebot4 Gymnasium Environment — *GitHub*
ROS2 | Gazebo Sim | Python — *Mar. 2025 – Present*
- A ROS2 and Gazebo based simulation environment for TurtleBot4.
- Designed to provide a minimal setup for quickly prototyping DRL agents for navigation using Gymnasium API.

MBD Simulink — *GitHub*
MATLAB | Simulink — *Dec. 2024 – Present*
- A productivity tool that automates block insertion, naming, and connection tasks in Simulink to streamline model-based design workflows.

SoP: Modular Statement of Purpose Template — *GitHub*
LaTeX — *Feb. 2025*
- A modular statement of purpose template for graduate school application.

Leadership and Outreach

2019 **Charity Affairs Coordinator**, Led the charity initiatives of the AASTU Students' Union, organizing fundraising and outreach efforts. — *AASTU*

Awards and Honors

2024 **Summa Cum Laude [✹]**, Graduated with highest honors, M.Sc. in Robotics & Automatic Control. — *WUT*
2024 **Mr Tomaka's Scholarship**, Awarded for academic excellence at Warsaw University of Technology. — *WUT*
2022 **Banach Scholarship**, Fully funded 2nd-cycle studies in Poland, covering tuition and living expenses. — *NAWA*
2021 **Summa Cum Laude [✹]**, Graduated with highest honors, B.Sc. in Electrical Engineering. — *AASTU*

Professional Memberships

2024– **Black in AI**, Member
2023– **IEEE Robotics and Automation Society**, Member
2023– **Institute of Electrical and Electronics Engineers (IEEE)**, Graduate student member