MERAJ MAMMADOV

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EDUCATION

Ulsan National Institute of Science and Technology (UNIST), South Korea
Master of Engineering in Mechanical Engineering (GPA: 97.00) Jun 2025
Bachelor of Engineering in Mechanical and Aerospace Engineering (GPA: 93.30, magna cum laude) Jun 2023
Minor in Computer Science and Engineering

SKILLS

Software	ROS, Isaac Sim, Gazebo, Docker, SolidWorks, CATIA, Aspen HYSYS, LabVIEW
Hardware	UAVs, 3D Printing, Arduino, Oscilloscope, Soldering
Programming languages	Python, C++, C, MATLAB/Simulink, Modelica, JavaScript
Spoken languages	Azerbaijani (N), Turkish (C1), English (C1), German (A2), Korean (A1)

EXPERIENCE

Autonomous Systems Laboratory, UNIST - Research Assistant Mar 2022 — Jun 2023
Project: Autonomous landing of UAVs on moving targets using end-to-end Reinforcement Learning (RL)

- Developed simulation environments for training RL agents on autonomous landing of UAVs on moving targets
- Conducted extensive experiments using Crazyflie platform to evaluate the real-world performance of the trained models
- Implemented and compared conventional landing algorithms against learning-based approaches
- Mentored a team of three students in their project focused on object detection from onboard UAV cameras

BP, Rig Engineering Team, Baku Office - Summer Intern Jul 2022 — Sep 2022
Project: Technical evaluation of Red Zone Management (RZM) safety systems for local deployment

- Conducted technical and economical assessments of available RZM systems and reported the findings to the management
- Organized meetings with OEMs and discussed the safety vulnerabilities of the deployed drilling equipment
- Visited oil drilling platforms and warehouses to identify the major safety hazards for the rig workers
- Surveyed maintenance procedures for safety-critical equipment and presented findings to the engineering team

Innovative Thermal Engineering Laboratory, UNIST - Research Assistant Jun 2021 — Jan 2022
Project: Enhancing Organic Rankine Cycle's (ORC) efficiency with hydrogen fuel cells (Collaboration with LG)

- Developed a library in Modelica from scratch for dynamic CFD of turbines, heat exchangers and pumps in ORCs
- Simulated hydrogen fuel cells and compared their energy efficiency to the traditional boiler-based ORCs
- Developed a tool in MATLAB to visualize real-time dynamic fluid behavior in active components
- Designed and 3D printed a prototype Rankine Cycle and presented the findings at an industry-academia exhibition

Brain to Society, InMobix team - Researcher Jul 2021 — Dec 2021
Project: Design and development of assistive devices to help the elderly with indoor mobility

- Analyzed the limitations of the existing mobility devices by attending relevant conferences and contacting the companies
- Conducted interviews with elderly of South Korea and their physicians to identify challenges related to indoor mobility
- Presented two assistive device designs addressing frequent fall accidents among the elderly at the project exhibition

Selected Personal Projects (more on github and my website)

- Trained an RL agent to drive racing cars in simulation and deployed it on a physical F1TENTH car
- Developed a novel movie search engine by training a Large Language Model (LLM) on movie descriptions
- Implemented and trained several language models in Azerbaijani and built their web interface in JavaScript
- Developed and simulated a mathematical model for pandemics and used it to forecast COVID-19 transmission rates

Teaching Assistance

- Spring 2023- Introduction to AI Programming I, Fall 2023- Introduction to AI Programming II, Discrete Mathematics

ACHIEVEMENTS

Robotics: Science and Systems (RSS) Fellowship, TU Delft, Netherlands Jul 2024
Global UniStar Scholarship for Academic Excellence, UNIST, South Korea Sep 2019 — Aug 2023
Bronze Medal in the 50th International Physics Olympiad, Tel-Aviv, Israel Jul 2019
Gold Medal in the National Physics Olympiad, Azerbaijan Jun 2019
Participant in the 49th International Physics Olympiad, Lisbon, Portugal Jul 2018
Silver Medal in the National Physics Olympiad, Azerbaijan May 2018
3rd Place in the 3rd International Metropolises Olympiad, Moscow, Russia Sep 2018

PUBLICATIONS

T. Park, W. Shin, **M. Mammadov**, H. Oh (2024). "'ButterflyTag': Rapid detection of fiducial markers in occluded environments", *IEEE Robotics and Automation Letters.* Under review

P. Ladosz, **M. Mammadov**, H. Shin, W. Shin, H. Oh (2024). "Autonomous Landing on a Moving Platform Using Vision-Based Deep Reinforcement Learning", *IEEE Robotics and Automation Letters, IROS option.* Mar 2024

M. Mammadov, H. Oh (2024). "End-to-end Lidar-Driven Reinforcement Learning for Autonomous Racing", *Korea Robotics Conference.* Feb 2024