

# MERAJ MAMMADOV

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## EDUCATION

### Örebro University, Sweden

Doctor of Philosophy (PhD) in Computer Science

Aug 2025 – Present

### Ulsan National Institute of Science and Technology (UNIST), South Korea

Master of Science in Mechanical Engineering (GPA: 97.50, summa cum laude)

Jun 2025

Thesis: "Learning End-to-End Perception-Aware Policies for UAV Collision Avoidance in Dynamic Environments"

### Ulsan National Institute of Science and Technology (UNIST), South Korea

Bachelor of Science 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), English (C1), Turkish (C1), German (A2)

## 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 the efficiency of organic Rankine cycles (ORC) 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

### Selected personal projects (more on github and my personal 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

## ACHIEVEMENTS

WASP Graduate Fellow – Wallenberg AI, Autonomous Systems and Software Program, Sweden

Aug 2025 – Present

Pathways@RSS Fellow – Robotics: Science and Systems, 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

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T. Park, G. Bae, W. Shin, <b>M. Mammadov</b> , J. Seo, H. Shin, H. Oh. "PACMAN: Rapid Identification of Keypoint Patch-Based Fiducial Marker in Occluded Environments", <i>Image and Vision Computing</i>	Nov 2025
P. Ladosz, <b>M. Mammadov</b> , H. Shin, W. Shin, H. Oh. "Autonomous Landing on a Moving Platform Using Vision-Based Deep Reinforcement Learning", <i>IEEE Robotics and Automation Letters, IROS option</i> .	Mar 2024
<b>M. Mammadov</b> , H. Oh. "End-to-end Lidar-Driven Reinforcement Learning for Autonomous Racing", <i>Korea Robotics Conference (KRoC)</i> .	Feb 2024

TEACHING ASSISTANCE

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Discrete Mathematics	Spring 2024
Introduction to Artificial Intelligence Programming II	Fall 2023
Introduction to Artificial Intelligence Programming I	Spring 2023