

MERAJ MAMMADOV

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EDUCATION

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

Masters of Engineering in Mechanical Engineering
Bachelor of Engineering in Mechanical and Aerospace Engineering
Minor in Computer Science and Engineering

Jun 2025
GPA: 92.30 (Magna Cum Laude)

SKILLS

Software	SolidWorks, CATIA, REFPROP, Aspen HYSYS, LabVIEW, Docker, Gazebo, ROS 2
Hardware	UAVs, 3D Printer, Arduino, Oscilloscope, Soldering
Programming languages	Python, C++, C, MATLAB, Simulink, Modelica, JavaScript, Scala
Spoken Languages	Azerbaijani (C2), Turkish (C1), English (C1), German (A2), Korean (A1)

EXPERIENCE

Autonomous Systems Laboratory, UNIST - Research Assistant

Mar 2022 — Present

Project: Safe UAV Landing on Moving Targets using Reinforcement Learning

- Designed advanced UAV simulation environments in PyBullet and Gazebo for vision-based Reinforcement Learning applications
- Developed and benchmarked an Image Based Visual Servoing (IBVS) algorithm in PyBullet against learning-based approaches
- Conducted extensive experiments using Crazyflie drones to evaluate the real-world performance of trained RL networks
- Mentored a team of three students in their project focused on object detection from UAV cameras

BP, Rig Engineering Team, Baku Office - Summer Intern

Jul 2022 — Sep 2022

Project: Evaluating Red Zone Management Technologies for Deployment

- Performed technical and economic assessments of RZM safety systems, delivered comprehensive reports to the management team
- Organized meetings with equipment manufacturers to analyze vulnerabilities and obtain technical deployment details
- Visited oil drilling platforms and warehouses, performed safety assessments to identify the major safety hazards for rig workers
- Researched equipment maintenance procedures and presented findings to the engineering squad

Innovative Thermal Engineering Laboratory, UNIST - Research Assistant

Jun 2021 — Jan 2022

Project: Enhancing Organic Rankine Cycle Efficiency and Waste Heat Recovery (Supervised by LG)

- Developed a custom Modelica library for static and dynamic simulation of pumps, turbines and heat exchangers in ORC systems
- Implemented PID controllers to efficiently handle initialization errors, significantly enhancing simulation robustness and accuracy
- Designed a real-time MATLAB tool to visualize fluid dynamics in active components, improving system understanding
- Created and 3D printed a scroll pump and fuel cell prototype for presenting the project at a cooperative project exhibition

Brain to Society, InMobix team - Team Member

Jul 2021 — Dec 2021

Project: Development of a Mechanical Device for Assisting Elderly with Indoor Mobility

- Evaluated the existing mobility devices and their limitations by contacting relevant companies and attending medical exhibitions
- Conducted interviews with elderly and physicians to pinpoint key indoor mobility challenges for the elderly in South Korea
- Designed and presented two 3D models addressing frequent fall accidents in the elderly population at the 2021 U-Challengers Festival

Selected Personal Projects (more on github and my website)

- Trained a Reinforcement Learning agent for self-driving racing cars in simulation and deployed on an F1TENTH physical car
- Built an obstacle-avoiding autonomous car with Arduino and ultrasonic sensors, implemented robust control algorithms
- Developed and simulated a mathematical model for COVID-19 transmission, leveraging demographic data to predict virus spread

Teaching Assistance

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

ACHIEVEMENTS

Global UniStar Scholarship for Academic Excellence, UNIST

Sep 2019 — Aug 2023

Bronze Medalist in the 50th International Physics Olympiad, Tel-Aviv, Israel

Jul 2019

Gold Medalist in the National Physics Olympiad, Azerbaijan

Jun 2019

Participant in the 49th International Physics Olympiad, Lisbon, Portugal

Jul 2018

Silver Medalist in the National Physics Olympiad, Azerbaijan

May 2018

3rd Place in the 3rd International Metropolises Olympiad, Moscow, Russia

Sep 2018