

Mohammad Mahdi Khademi

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Research interests

- Autonomous Vehicles
- Reinforcement Learning
- Robotics
- Deep Learning
- Mechatronics and Mechanical design

Education

B.Sc Iran University of Science and Technology (IUST), Bachelor of Mechanical Engineering Sep 2021 – present

• **Total GPA:** (3.08/4) • **Last 2 Years GPA:** (3.39/4)

Research experience

Mechatronics Lab, Reinforcement Learning for Autonomous Parallel Parking March 2024 - present

- Trained a virtual car to perform parallel parking using reinforcement learning (PPO, DQN, TD3). Created a custom reward function to optimize alignment, curb distance, and maneuver success. Tested in Webots with plans for real-world sensor integration and enhanced control.

Supervisor: [Dr. Seyed Hassan Zabihiifar, Assistant Prof.](#) [🔗](#)

Honors and Awards

Mentor of an Artificial Intelligence Competition, overseeing and providing guidance to participants. Nov 2024

Ranked among top 0.01% in the nationwide university undergraduate entrance exam Iran. Sep 2021

Projects

Modeling and Simulation of an R-3000 Rotopod [🔗](#) in SOLIDWORKS and MATLAB May 2024

Related Course: Mechanisms Design

- Designed and simulated a Rotopod using a Stewart platform for six degrees of freedom, reducing vibrations and instability. Modeled in SolidWorks, simulated in CoppeliaSim, and analyzed in MATLAB.

Automated License Plate and Lane Detection Using Deep Learning and Image Processing Nov 2023

Related Course: Artificial Intelligence

- Developed a CNN-based system for automated license plate recognition and character reading. Applied image processing techniques for lane detection and integrated real-time video input for dynamic analysis. Designed a user-friendly interface for seamless image and video processing.

Human Detection and Pose Estimation with Deep Learning Sep 2023

Related Course: Artificial Intelligence

- Collected and annotated a human pose dataset, trained a CNN with TensorFlow/Keras

for classification, and integrated YOLO for real-time detection. Built a keypoint-based pose estimation system with visualization, strengthening computer vision and ML expertise.

Selected Courses

Artificial Intelligence, GPA :20/20 (4/4)

Computer Programming, GPA : 19.6/20 (4/4)

Mechanism Design, GPA :19.4/20 (4/4)

Teaching experience

Artificial Intelligence, Teaching Assistant

Fall 2024

The school of Mechanical Engineering, Iran University of Science and Technology

Fall 2025

Supervisor: Dr. Seyed Hassan Zabihifar, Assistant Prof.

Mechanism Design, Teaching Assistant

Winter 2025

The school of Mechanical Engineering, Iran University of Science and Technology

Spring 2025

Supervisor: Dr. Seyed Hassan Zabihifar, Assistant Prof.

Summer 2025

Advanced Control Systems, Teaching Assistant

Fall 2024

The school of Mechanical Engineering, Iran University of Science and Technology

Supervisor: Dr. Amir Hossein Davaie Markazi, Prof.

Engineering Dynamics, Teaching Assistant

Fall 2024

The school of Mechanical Engineering, Iran University of Science and Technology

Supervisor: Dr. Majid Rajabi, Associate Prof.

Technical skills

Engineering Softwares: SOLIDWORKS, MSC ADAMS, Webots, CoppeliaSim, Gazebo, Arduino, Simulink, Abaqus CAE

Programming Languages: Python, MATLAB, C++

Machine Learning Frameworks: TensorFlow, Keras, PyTorch

Python Libraries: NumPy, Matplotlib, Pandas, SciPy, OpenCV

Publishing Tools: \LaTeX , Microsoft Office Package

Operating Systems: Windows, Linux

Languages

Persian: Native

English: Fluent

TOEFL iBT: It will be ready on **October 2, 2025**.

Reading: -/30

Listening: -/30

Speaking: -/30

Writing: -/30

References

Dr. Seyed Hassan Zabibifar

Assistant Professor

Home Page: [Dr. Seyed Hassan Zabibifar](#)

Dr. Majid Rajabi

Associate Professor

Home Page: [Dr. Majid Rajabi](#)

Dr. Amir Hossein Davaie Markazi

Professor

Home Page: [Dr. Amir Hossein Davaie Markazi](#)