# Negar Naghavian

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## Research interests

- Reinforcement Learning
- Robotics
- Mechatronics and Mechanical Design
- Automatic Control Systems
- Deep Learning

## Education

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

- **Last two years GPA:** 3.54/4                    • **Total GPA:** 3.14/4

## Research experience

**Robotic & Artificial intelligence Lab(RAIZ)**, **Reinforcement Learning for Autonomous Parallel Parking**                                March 2024 - present

- Training a virtual car for parallel parking using reinforcement learning algorithms (PPO, DQN and TD3) for continuous control. Designing a reward function to optimize alignment, curb distance, and successful parking maneuvers. Simulating scenarios in Webots while planning for real-world sensor integration and control refinement.

Superviser: Dr. Seyed Hassan Zabihifar, 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

- Created a comprehensive 3D model of the R-3000 Rotopod in SOLIDWORKS, accurately representing its mechanical structure and movements. Simulated dynamic performance in MATLAB to analyze key operational parameters and behavior.

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

Related Course: Artificial Intelligence

- Developing a license plate detection system using CNNs and character recognition for automated reading. Applying image processing for lane line detection and integrating real-time video input for dynamic environments. Designing a user-friendly interface for image and video processing.

**Human Detection and Pose Estimation with Deep Learning**                                Sep 2023

Related Course: Artificial Intelligence
- Implemented human detection using YOLO for fast and accurate identification.
- Developed a CNN model for classifying human poses, such as walking or sitting, and combined both for a system that recognizes and categorizes human activities.

## Selected Courses

**Artificial Intelligence,** GPA :19.9/20 (4/4)

**Automatic Control Systems,** GPA : 18.1/20 (4/4)

**Fundamental of Programming ,** GPA :19.1/20 (4/4)

## Teaching experience

**Automatic Control Systems**, Teaching Assistant                                          Winter 2025
The school of Mechanical Engineering, Iran University of Science and Technology,
Instructor: Dr. Amir Hossein Davaie Markazi, Prof.

**Mechanical Vibrations** , Teaching Assistant                                               Winter 2025
The school of Mechanical Engineering, Iran University of Science and Technology,
Instructor: Dr. Majid Rajabi, Associate Prof.

**Artificial Intelligence** , Teaching Assistant                                                Fall 2024
The school of Mechanical Engineering, Iran University of Science and Technology,
Instructor: Dr. Seyed Hassan Zabihifar, Assistant Prof.

**Engineering Dynamics** , Teaching Assistant                                               Fall 2024
The school of Mechanical Engineering, Iran University of Science and Technology,
Instructor: Dr. Majid Rajabi, Associate Prof.

## Technical skills

**Programming Languages:** Python, MATLAB, C++

**Machine Learning Frameworks:** TensorFlow, Keras, PyTorch

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

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

## Languages

**English:** Fluent. TOEFL iBT: available on 4 November 2025.

Reading: - /30 Listening: - /30 Speaking: - /30 Writing: - /30

**Persian:** Native

## References

- **Dr. Seyed Hassan Zabibifar**
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  Home Page: Dr. Seyed Hassan Zabihifar 🗗

- **Dr. Majid Rajabi**
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- **Dr. Amir Hossein Davaie Markazi**
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