# **Negar Naghavian**

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#### Research interests \_

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

#### Education \_

Iran University of Science and Technology (IUST), Bachelor of Mechanical Engineering

Sep 2021 – present

• Total GPA: 3.14/4

• Last year GPA: 3.54/4

## Research experience \_\_\_\_\_

#### Mechatronics Lab, Reinforcement Learning for Autonomous Parallel Parking

March 2024 - present

• Training a virtual car for parallel parking using reinforcement learning algorithms (SAC, DQN, 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 refine-

Superviser: Dr. Seved Hassan Zabihifar, Assistant Prof. 2

## Honors and Awards \_\_\_\_\_

Ranked among top 0.01% in the nationwide university undergraduate entrance exam

Sep 2021

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

Nov 2024

## Projects \_\_\_\_\_

#### 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 userfriendly 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.

#### 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.

#### 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 \_\_\_\_

#### 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.

#### **Automatic Control Systems**, Teaching Assistant

Winter 2025

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

Supervisor: 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.

### 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 Email: shzabihifar@iust.ac.ir Dr. Majid Rajabi

Email: majid\_rajabi@iust.ac.ir ☑ Home Page: Dr. Majid Rajabi ☑

• Dr. Amir Hossein Davaie Markazi

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