Roujin Mousavifard

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EDUCATION

University of Tehran (UT) — Tehran, Iran
M.Sc. in Mechatronics Engineering, — 2020-2023
Cumulative GPA: 18.43/20 via 29 credits (Thesis included)

- **Thesis**: Control of Robots using a Novel Stochastic Model-Free Trajectory Tracking Controller for Position and a Deep Learning-Based Attitude Controller

Amirkabir University of Technology (Tehran Polytechnic) — Tehran, Iran
B.Sc. in Mechanical Engineering, Control — 2015-2020
Cumulative GPA for the last two years: 17.54/20

- **Thesis**: Design and Fabrication of a Portable Vibration Simulator

National Organization of Development for Exceptional Talents (NODET) — Tehran, Iran
Farzanegan High School, High School Diploma in Mathematics and Physics, — 2011-2015
High School Diploma Cumulative GPA: 19.60/20

RESEARCH INTERESTS

- Advanced Control Systems
- Autonomous Systems and Robotics
- Machine Learning and AI
- Optimal Control Theory
- Embedded Systems for Automation
- Industry 4.0 and IoT

PUBLICATIONS

Robot Trajectory Tracking using Combined Stochastic Model-Free Position and DDPG-based Attitude Control, **ISA Transactions**. — 2025

Control of Robots Using Convex QP LMPC and Learning-Based Explicit-MPC, in **IEEE Transactions on Industrial Informatics**. — 2024

Formation Control of Multi-robots Based on Deep Q-learning, 10th RSI International Conference on Robotics and Mechatronics (ICRoM) — 2022

Formation Control of Multiple Robots Using LSTM-based Model Predictive Control, 10th RSI International Conference on Robotics and Mechatronics (ICRoM) — 2022

Optimal control of self-balancing robot in the presence of uncertainties based on interval analysis, The 27th Annual International Conference of Iranian Society of Mechanical Engineers (ISME) — 2019

ACADEMIC EXPERIENCE

Research Assistant at Advanced Service Robots (ASR) Laboratory, Supervisor: Prof. Khalil Alipour, Prof. Bahram Tarvirdizadeh	2022 – Present (Part-time)
Teaching Assistant, Advanced Automatic Control (Graduate Course),	2022 (Spring, Fall)
Instructor, Mechatronics and Automation Laboratory	Spring 2020
Teaching Assistant, Mechatronics (Undergraduate Course)	Spring 2020
Teaching Assistant, Stress-Strain Laboratory, (Undergraduate Course)	2019

INDUSTRIAL EXPERIENCE

Elcarad Industry Company Tehran, Iran
Research and Development 2022-present
Responsibilities:

- Contributed to the design of **automation** and **Industry 4.0** condition monitoring systems to meet customer needs.

Future Green Systems Company Tehran, Iran
Research and Development 2021-2022
Responsibilities:

- Developed prototypes by integrating **electronics**, **mechanics**, and **software technologies**.

HDL Company Tehran, Iran
Internship Summer 2019
Responsibilities:

- Configured **smart home** modules to automate functionality.

Parskhodro Company Tehran, Iran
Internship Summer 2018
Responsibilities:

- Control the sealer used in Renault-L90 car industrial line.

NOTABLE PROJECTS

Industrial Projects

Predictive Maintenance System Elcarad Industry Company
Designed and fabricated a predictive maintenance system, integrating hardware and software, to monitor rotor vibrations, diagnose malfunctions, and predict failures for effective condition monitoring.

Modular Tracker Device Elcarad Industry Company
Designed and prototyped a modular tracker device with an accompanying app that integrates into various gadgets, enhancing capabilities like blood pressure and temperature monitoring for elderly care.

RFID Reader and Tracking Module Elcarad Industry Company
Developed and fabricated an RFID reader with tracking modules to improve the management of livestock, optimizing tracking and resource allocation.

Academic Projects

Robotic Arm for Multi-Tasking Advanced Robotics Course
Designed, built, and controlled a robotic arm for trajectory tracking, object following, and color detection, with applications in automation and industrial processes.

Quality Control System Using Deep Learning Artificial Intelligence Course
Developed a quality control system utilizing deep learning and neural networks for image processing, specifically applied to detect defects in water bottles during production.

SOFTWARE AND PROGRAMMING SKILLS

Programming Languages: MATLAB & Simulink, Python, PyTorch, C, C++, Java

Robotics and Simulation: ROS, Pinocchio, Gazebo, MuJoCo, Simscape Multibody

Embedded Systems: PLC, Arduino, Raspberry Pi, ESP32

Mechanical Software: SOLIDWORKS, MSC ADAMS

Electronic Software: Altium Designer, Proteus Design Suite

Software Development: Android and Web Application Development, SQLite

HONORS & AWARDS

Ranked Top 3 among master of mechatronics engineering students at University of Tehran 2023

Full Tuition Waiver Scholarship awarded by Amirkabir University of Technology 2015-2020

Recipient of Exceptionally talented student Scholarship awarded as an Exceptionally Talented Student 2015

Ranked 508th among more than 250,000 participants in the Nation-Wide University Entrance Exam 2015

LANGUAGE PROFICIENCY

- English: Level C1 (IELTS: 7.5/9)
- Deutch: Level A2