

# Alireza Kargar

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in Alireza Kargar

## RESEARCH INTEREST

- Computer-Aided Design & Manufacturing.
- Robotics & System Design.
- Service Robots.
- Human-Robot Interaction.
- Rehabilitation Robotics.
- Social Robots.

## EDUCATION

### M.Sc. in Mechatronics Engineering

2017–2021

University of Tehran

Tehran-Iran

- Thesis: Design and prototype a robot for cleaning glass façade buildings.
- Supervisor: Dr. Manuchehr (Hadi) Moradi Sabzevar.
- Overall GPA: 16.07/20.

### B.Sc. in Mechanical Engineering

2013–2017

Islamic Azad University, West Tehran Branch

Tehran-Iran

- Thesis: Vehicle's mini wind turbine.
- Supervisor: Dr. Hamed Moayeri Kashani.
- Overall GPA: 15.81/20.

## PUBLICATION

- Mehralizadeh B, Soleiman P, Nikkhoo S, Rahimi M, **Kargar A**, Masoumi F, Moradi H. [Multi-Modal ASD Screening System: A Preliminary Study](#). In 2023 11th RSI International Conference on Robotics and Mechatronics (ICRoM) 2023 Dec 19 (pp. 228-234). IEEE
- Koochakzadeh E, **Kargar A**, Sattari P, Ravanshid D, Nasiri R. Seven Benefits of Using Series Elastic Actuators in Design of an Affordable, Simple Controlled, and Functional Prosthetic Hand. In The International Conference on Intelligent Robots and Systems (IROS 2024) – **Under Review**
- Nasiri R, Koochakzadeh E, **Kargar A**, Sattari P. A Novel Slippage Detection Method for Underactuated and Compliant Prosthetic Hands. – **Under Preparation**

## EXPERIENCE

### RESEARCH EXPERIENCE

#### Research Assistant

2023–Present

Research Institute for Robotics, Artificial Intelligence & Information Science (RAIIS).

Supervisor: Rezvan Nasiri

- **Prosthetic Hand:** Developing design and implementation of a 3D printed prosthetic hand powered by a series of elastic actuators controlled by Electromyography (EMG) signals.

#### Research Assistant

2017–2023

Advanced Robotics & Intelligent Systems (ARIS) Lab.

Supervisor: Manouchehr (Hadi) Moradi Sabzevar

- **Glass façade buildings cleaner robot:** Designed, prototyped, and controlled a compliant robotic system with significant irregularities on the building surface for cleaning or maintenance tasks.
- **Multi-modal ASD screening system:** Designed, developed, and tested the required Robotic tools and equipment for the ASD Screening system.
- **NeuroLight:** Developing design and implementation of a cyber-physical system comprised of programmable wireless light modules to improve athletes' speed and agility.
- **BAMS.V2:** Designed and developed a holonomic-drive social robot platform that interacts with children for education and entertainment.
- **Elbow rehabilitation robotic system:** Redesigned and prototyped an active series elastic mechanism for elbow rehabilitation.

<b>Research Assistant</b>	<b>2015-2017</b>
<i>College of Engineering, Islamic Azad University, West Tehran Branch</i>	
Supervisor: Dr. Hamed Moayeri Kashani.	
<ul style="list-style-type: none"> <li>• <b>Vehicle's mini wind turbine:</b> Developed and prototyped a mini wind turbine for vehicles based on the concept of vertical-axis wind turbines.</li> <li>• <b>Automatic parasol:</b> Design and prototype an automatic parasol for urban open spaces to protect people from sunlight or rain.</li> <li>• <b>Automatic canopy:</b> Designing and prototyping a lightweight and inexpensive automatic canopy.</li> </ul>	

## TEACHING & MENTORING EXPERIENCE .....

<b>Lecturer</b>	<b>2021- 2023</b>
<i>School of Electrical and Computer Engineering, University of Tehran.</i>	
<ul style="list-style-type: none"> <li>• General Workshop course: CAD/CAM, SOLIDWORKS, Simplify3D.</li> </ul>	
<b>Instructor</b>	<b>2021-2022</b>
<i>Scientific Association of Chemical and Polymer Engineering.</i>	
<ul style="list-style-type: none"> <li>• Course: Computer-aided Design, SOLIDWORKS.</li> </ul>	
<b>Teaching Assistant</b>	<b>2020-2021</b>
<i>School of Electrical and Computer Engineering, University of Tehran.</i>	
<ul style="list-style-type: none"> <li>• General Workshop course Chief-TA: CAD/CAM, SOLIDWORKS, Simplify3D.</li> </ul>	
<b>Teaching Assistant</b>	<b>2019-2020</b>
<ul style="list-style-type: none"> <li>• <i>School of Electrical and Computer Engineering, University of Tehran</i></li> <li>• Robotics course TA: Project design and grading.</li> </ul>	
<b>Mentor</b>	<b>2018-2023</b>
<i>Advanced Robotics &amp; Intelligent Systems Lab, University of Tehran.</i>	
<ul style="list-style-type: none"> <li>• Trained new members in SOLIDWORKS, 3D printing, Arduino, and MATLAB.</li> </ul>	
<b>Teaching Assistant</b>	<b>2015-2016</b>
<i>College of Engineering, Islamic Azad University, West Tehran Branch.</i>	
<ul style="list-style-type: none"> <li>• Statics course TA: Supervisor of student Homework</li> <li>• programming Mentor: MATLAB &amp; Simulink</li> </ul>	

## WORK EXPERIENCE.....

<b>Freelancer</b>	<b>2016-Present</b>
<i>Self-Employment</i>	
Design and Implementation of Mechatronic systems and Mechanical goods.	
<b>Mechatronics Engineer</b>	<b>2022</b>
<i>Tehran Platform Co.</i>	
<ul style="list-style-type: none"> <li>• <b>XY plotter:</b> Design and develop a 2D plotter for drawing Architectural plans on a painting canvas.</li> </ul>	
<b>Mechatronics Engineer</b>	<b>2018</b>
<i>Tehran Platform Co.</i>	
<ul style="list-style-type: none"> <li>• <b>WELLOGRAPH - painter robot:</b> Redesign and Optimize the painting module of a holonomic-drive mobile robot.</li> </ul>	
<b>Research and Development team member</b>	<b>2017-2018</b>
<i>Hamyar Mechanic Kousha Co.</i>	
<ul style="list-style-type: none"> <li>• Design and produce rehabilitation and easy-access equipment.</li> </ul>	
<b>Internship</b>	<b>2015</b>
<i>Mehrsa Sanat Hooshmand</i>	
<ul style="list-style-type: none"> <li>• Designed and Manufactured Hydraulic scrap car press baler (Compactor Machine)</li> </ul>	

## VOLUNTEER EXPERIENCE .....

<b>Introduce technology-based ASD systems for children with Autism.</b>	<b>Oct.2018</b>
<i>Tehran Annual Digital Art Exhibition.</i>	
<b>Introduce the novel research achievements of Azad University engineering students.</b>	<b>Dec.2016</b>
<i>Research Week Exhibition.</i>	

## TEST SCORE

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<b>TOEFL</b>	Overall Score: 107 (Listening:30, Reading:29, speaking:22, writing:26)
<b>GRE General</b>	Overall Score: 328 (Quantitative:170, Verbal:158, Analytical Writing:5)

## ACADEMIC PROJECTS

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<b>HSRD:</b> Developing design and implementation of a Hand spasticity rehabilitation device for post-stroke recovery.	<b>2021-2022</b>
<b>BAMS.V1:</b> Design and Develop an open-source interactive social robot head with sound-based localization and hand-tracking ability with the help of an IR sensors Array.	<b>2016</b>
<b>B-bot:</b> Design and Implement a differential drive Mobile Robot that follows the path drawn by the user on the computer precisely on the ground with a particular scale.	<b>2016</b>

## WORKSHOPS & SEMINAR

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Industrial automation expert training course	<b>2018</b>
Mechatronics and Robotics course (Advanced)	<b>2018</b>
Mechatronics and Robotics course (Introductory)	<b>2017</b>
MATLAB and Simulink for Mechanical Engineers	<b>2017</b>
Mechanical design using CATIA software.	<b>2017</b>
GD&T Geometric Tolerancing	<b>2017</b>

## SKILLS

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<b>CAD/CAM/CAE</b>	SOLIDWORKS, CATIA, MSC Adams, 3D Printing Software, ABAQUS
<b>Programming</b>	Python, MATLAB, C/ C++ (Arduino), Ladder (PLC), ROS, Git
<b>Professional skills</b>	Pneumatic & Hydraulic Systems
<b>Soft Skills</b>	Critical thinking, R&D team leadership, Systematic thinking
<b>Language skill</b>	English (Proficient), Farsi (Native)

## REFERENCES

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**Dr. Manouchehr (Hadi) Moradi Sabzevar**, Professor, University of Tehran, Tehran, Iran.

- Email: [moradih@ut.ac.ir](mailto:moradih@ut.ac.ir)

**Dr. Seyed Kamaledin Setarehdan**, Professor, University of Tehran, Tehran, Iran.

- Email: [ksetareh@ut.ac.ir](mailto:ksetareh@ut.ac.ir)

**Dr. Rezvan Nasiri**, Assistant Professor, University of Tehran, Tehran, Iran.

- Email: [rezvan.nasiri@ut.ac.ir](mailto:rezvan.nasiri@ut.ac.ir)