

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 Shirazi D, Nasiri R. Seven benefits of using series elastic actuators in the design of affordable prosthetic hands. In The 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024) – **Submitted**
- 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.

Research Assistant

2015-2017

College of Engineering, Islamic Azad University, West Tehran Branch

Supervisor: Dr. Hamed Moayeri Kashani.

- **Vehicle's mini wind turbine:** Developed and prototyped a mini wind turbine for vehicles based on the concept of vertical-axis wind turbines.
- **Automatic parasol:** Design and prototype an automatic parasol for urban open spaces to protect people from sunlight or rain.
- **Automatic canopy:** Designing and prototyping a lightweight and inexpensive automatic canopy.

TEACHING & MENTORING EXPERIENCE

Lecturer

2021- 2023

School of Electrical and Computer Engineering, University of Tehran.

- General Workshop course: CAD/CAM, SOLIDWORKS, Simplify3D.

Instructor

2021-2022

Scientific Association of Chemical and Polymer Engineering.

- Course: Computer-aided Design, SOLIDWORKS.

Teaching Assistant

2020-2021

School of Electrical and Computer Engineering, University of Tehran.

- General Workshop course Chief-TA: CAD/CAM, SOLIDWORKS, Simplify3D.

Teaching Assistant

2019-2020

- *School of Electrical and Computer Engineering, University of Tehran*
- Robotics course TA: Project design and grading.

Mentor

2018-2023

Advanced Robotics & Intelligent Systems Lab, University of Tehran.

- Trained new members in SOLIDWORKS, 3D printing, Arduino, and MATLAB.

Teaching Assistant

2015-2016

College of Engineering, Islamic Azad University, West Tehran Branch.

- Statics course TA: Supervisor of student Homework
- programming Mentor: MATLAB & Simulink

WORK EXPERIENCE.....

Freelancer

2016-Present

Self-Employment

Design and Implementation of Mechatronic systems and Mechanical goods.

Mechatronics Engineer

2022

Tehran Platform Co.

- **XY plotter:** Design and develop a 2D plotter for drawing Architectural plans on a painting canvas.

Mechatronics Engineer

2018

Tehran Platform Co.

- **WELLOGRAPH - painter robot:** Redesign and Optimize the painting module of a holonomic-drive mobile robot.

Research and Development team member

2017-2018

Hamyar Mechanic Kousha Co.

- Design and produce rehabilitation and easy-access equipment.

Internship

2015

Mehrsa Sanat Hooshmand

- Designed and Manufactured Hydraulic scrap car press baler (Compactor Machine)

VOLUNTEER EXPERIENCE

Introduce technology-based ASD systems for children with Autism.

Oct.2018

Tehran Annual Digital Art Exhibition.

Introduce the novel research achievements of Azad University engineering students.

Dec.2016

Research Week Exhibition.

TEST SCORE

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

ACADEMIC PROJECTS

HSRD: Developing design and implementation of a Hand spasticity rehabilitation device for post-stroke recovery.	2021-2022
BAMS.V1: 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.	2016
B-bot: 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.	2016

WORKSHOPS & SEMINAR

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

SKILLS

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

REFERENCES

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

- Email: moradih@ut.ac.ir

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

- Email: ksetareh@ut.ac.ir

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

Email: rezvan.nasiri@ut.ac.ir