Alireza Kargar

23/10/1994
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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. In2023 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