## Yasin Salehi (He/Him/His)

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## EDUCATION

AmirKabir University of Technology, Tehran, IRAN (2021 – 2024)

M.Sc. Mechatronics Engineering,

Adviser: S. Mehdi Rezaei, Professor

Thesis: Development of Cooperative Robot Utilization Method in Robot Based Compact Storage and Retrieval Systems (RCS/RS)

University of Kurdistan, Sanandaj, IRAN (2015 – 2020)
B.Sc. Mechanical Engineering,
Adviser: Sirwan Farhadi, Assistant Professor
Final Project: Fabrication and Modeling of an experimental setup for controlling inverse pendulum

## **RESEARCH EXPERIENCE**

# Development of Cooperative Robot Utilization Method in Robot Based Compact Storage and Retrieval Systems (RCS/RS) (2022 – 2024)

Advisors: Professor S. Mehdi Rezaei and Dr. A. Abolfazl Soratgar

Fund Organization: Tehran Chamber of Commerce, Industries, Mines and Agriculture

Simulation of a novel warehousing management system based on cooperation of Robots

- Design Storage and Retrieval processes
- Virtual implementation, analysis and first stage validation of systems by C++

Fabrication cooperative Robots and validation of system

- Design of Complex mechanical Mechanisms of Robot
- Design PCB
- **FOC** Control of Brushless
- Design and Fabrication of Brushless Driver for FOC Control from ground
- 3D Printing
- Microcontroller, Actuators, power sources and etc.

#### Link to Project

## Real-Time Angle Estimation in IMU Sensors: An Adaptive Kalman Filter Approach with Forgetting Factor (2024)

#### Advisor: Dr. Mohammad Zareinejad

Simulation of an adaptive Kalman filter algorithm for noise cancelation of IMU MEMS sensors

- Simulation the algorithm using Simulink MATLAB
- Virtual validation and analysis of algorithm by generated and saved data
- Experimental implementation for Validation of system for real world application
  - Microcontroller, Actuators, sensors and etc.

Link to Article

#### Autonomous Mobile Robots Path Planning: A Novel Obstacle Based Approach (2023-Now)

Advisor: - (this project is caring on individually at the moment)

Development of an algorithm based on the fusion of Bug and A-Star algorithms

- Simulation the algorithm using C++
- Virtual validation and analysis of algorithm

#### Link to Project

## All-in-One Compact Joint Actuator for Robots with a Novel Strain Wave Gear Reducer and Brushless Motor (2024-Now)

Advisor: Prof. S. Mehdi Rezaei, Prof H. GhafariRad

Develop an extention of harmonic drive to use in wheels of Cooperative Robots Utilization in Robot-based compact storage and retrieval systems (RCS/RS)

• 3D Printed Parts

### PATENT

Prospected patent:

Second type of robots in Cooperative Robots Utilization in RCS/RS project (2021 - Now)

• Second type is unique and highly susceptible for industrial application.

#### Link to Project

Cryptographic signature device for time stamping documents in banking system (2022 – Now)

• Personal project

### **PROFESSIONAL EXPERIENCE**

Hamrah-Aval Mobile Telecommunication Company, Tehran, IRAN (2022) Intern, IoT instructor, Full-time, Summer 2022

**Avid Construction Company,** Kermanshah, IRAN (2019) Mechanical engineer, Part-time, 2020

**Avid Construction Company,** Kermanshah, IRAN (2019) Intern, Mechanical engineering, Full-time, 2019

## **TEACHING EXPERIENCE**

#### AmirKabir University of Technology, Tehran, IRAN (2023)

Teaching Assistant, Spring 2023

- Instructed Automation in Production course
- Held weekly office hours and graded problem sets, tests and final projects
- Helped students to understand the course concepts and problems
- Helped students to find industry-related project for course final project by cooperation with private sectors

Hamrah-Aval Mobile Telecommunication Company, Tehran, IRAN (2022)

- Instructed students in high school as IoT instructor
- Helped students to understand about basics of IoT

- Design and create challenges that involve Arduino and Raspberry Pi to captivate my students with realworld problems.
- Offer optional individual projects to motivated students.

## **RELEVANT COURSES**

#### **University Robotics Related Courses:**

Mechanics:	Dynamics and Kinematics, Dynamics of Machines, Machine Elements Design, Mechanics of Material, Methods of Production, Engineering Materials
Robotics and Mechatronic:	Mechatronics I, Mechatronics II, Basics of Mechatronics-Electrical Engineering, Fundamentals of Electrical Engineering (Electrical Circuits and Electrical Machines), Advanced Robotics, IIoT, Computational Intelligence & Its Applications in Mechatronics
Control:	Mechanical Vibrations, Automatic Control, Advanced Automatic Control, IIOT, Advanced Robotics.
Extracurricular	courses:

Machine Learning: Stanford University:

Supervised Machine Learning: Regression and Classification, Advanced Learning Algorithms, Unsupervised Learning- Recommenders-Reinforcement Learning

Robotics:

Northwestern University

- Modern Robotics Series: Foundations of Robot Motion
- Modern Robotics Series: Robot Kinematics

#### University of Pennsylvania

• Robotics Specialization Series: Aerial Robotics

Stanford University:

• Introduction to Statistics

## **SKILLS AND TESTS**

IELTS:	Overall: <b>7.5</b> (L: 8.5, R: 8.0, W: 6.5, S: 6.5)
Programming Languages:	C/C++, Python, MATLAB, PHP, Arduino, Fortran, Mathematica
Software:	SolidWorks, Proteus, Abaqus, LOGO Soft, Linux
Frameworks:	Pytorch, TensorFlow, ROS, Keras, Laravel
Soft Skills: Other:	Creative, Team Collaborator, Adaptive, Presentation Skills Lidar, Ultrasonic, Hamonic and Cycloid Gears

## PUBLICATIONS

#### Book:

M.B. Menhaj, "Advanced Engineering Mathematics (for Mechatronics Engineers)", Amirkabir University of Technology publication, Expected 2024

Editor

Link to Book Draft (Farsi)

#### **Journal Papers:**

Submitted:

Z. Anvari, S.A.M. Jalali, **Y. Salehi**, M. Zareinejad, "Real-Time Angle Estimation in IMU Sensors: An Adaptive Kalman Filter Approach with Forgetting Factor(2024)", Mechatronics, Expected 2024 (Sent for first revision) Link to a Draft

Under Preparation:

**Y. Salehi**, S. M. Rezaei, A. Soratgar, "Development of Cooperative Robot Utilization Method in Robot Based Compact Storage and Retrieval Systems (RCS/RS)", Expected 2024 <u>Link to Project</u>

**Y. Salehi,** "Autonomous Robots Path Planning: A Novel Obstacle Based Approach", Expected 2024-2025 Link to Project

Y. Salehi, S. Mehdi Rezaei, H. GhafariRad "All-in-One Compact Joint Actuator for Robots with a Novel Strain

Wave Gear Reducer and Brushless Motor", Expected 2025

## HONORS AND AWARDS

- Secured the 1<sup>st</sup> rank in overall points for the Mechatronics Engineering PhD postgraduate Konkor, combining Konkor committee points and Konkor Ranking.
- Secured the 4<sup>th</sup> admission rank out of seven highly competitive positions in the M.Sc. of Mechatronics program at Amirkabir University of Technology, the top national university for Mechatronics.
- Secured the 116<sup>th</sup> position out of more than 15,000 participants in the Mechatronics Engineering MSc postgraduate Konkor.
- Granted the first Tehran Chamber of Commerce, Industries, Mines, and Agriculture scholarship for need-based theses, one of only four recipients.

## **OTHER ACTIVITIES:**

#### **Athletic Activities:**

Several Championship in province and one national ranking in Volleyball, ex-professional Volleyball player in ZirGoroh Volleyball League, **ex-Captain** and **Captain** of University of Kurdistan and Amirkabir University of technology's Volleyball team.

#### **Volunteering Activities:**

Mahak Charity - Society to Support Children with Cancer (2021-Now)

• Support Children, mostly distributing flyers, translating and general works.

Iranian Blood Transfusion Organization (2017-Now)

• Regular blood and platelet donor

## REFERENCES

S. Mehdi Rezaei, Professor, Mechanical Engineering Department, AmirKabir University of Technology
 Relation: M.Sc. Supervisor, Instructor of M.Sc. Course: Automation in Production
 (+98) 912-121-5260, <u>smrezaei@aut.ac.ir</u>
 <u>Link to Google Scholar</u>

Sirwan Farhadi, Assistant Professor, Mechanical Engineering Department, University of Kurdistan Relation: B.Sc. Supervisor, Instructor of B.Sc. Courses: Dynamics, Machines Dynamics, Mechanical Vibrations and Automatic Control (+98) 912-518-7960, <u>s.farhadi@uok.ac.ir</u> Link to Google Scholar

Iman Sharifi, Assistant Professor, Electrical Engineering Department, AmirKabir University of Technology Relation: Instructor of M.Sc. Courses: Industrial Internet of Things, Advanced Robotics, Basics of Mechatronics-Electrical Engineering (+98) 912-601-8478, <u>imansharifi@aut.ac.ir</u> Link to Google Scholar