

# Ali Safi

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Scholar: <https://short-link.me/SafiScholar>

## SUMMARY

- Experienced researcher in Mechanical and Control Engineering.
- Specialized in designing and applying control theories to practical situations.
- Proficient in programming languages such as MATLAB, Arduino, and Python.
- Skilled in electrical circuit design and fluent in English as a second language.
- Strong in presentation, problem-solving, and committed to achieving results.
- Eager to learn reinforcement learning and machine learning

## EDUCATION

### Iran University of Science and Technology, Tehran, Iran

Sep 2018 – Feb 2021

- M.Sc. in Mechanical Engineering (Control, Dynamics and Vibrations)
  - Thesis: A New Controller Design Technique for Piecewise Affine Hybrid Systems
  - Adviser: Dr. Esmacel Khanmirza
  - GPA: 18.07 / 20

### Golpayegan College of Engineering, Isfahan University of Technology, Isfahan, Iran

Sep 2014 – Jun 2018

- B.Sc. in General Mechanical Engineering
  - Thesis: Control Design and Implementation of a Ball and Beam Device
  - Adviser: Dr. Mostafa Nasiri
  - GPA: 18.96 / 20

## INTERESTS

- Control Theory (MPC, LMI, LQG, SMC, Fuzzy, Adaptive)
- Robotics and Mechatronics
- Hybrid Dynamical Systems
- Internet of Things (IoT)
- Automation
- Delay Effect Analysis

## RESEARCH EXPERIENCE

### Lead Developer @ A Partnership with TurboSep

Nov 2023 – Apr 2025

- Design, fabrication, and documentation of an industrial-grade CNC plasma cutting table

### Research And Development Engineer @ Electro Samane Alvand (ELSA)

Jan 2021 – Jun 2021

- Design, Construction, Calibration and Software Development of an Electric Motor Testing Dynamometer
- Parameter Estimation of a Single-Phase Axial Flux Induction Motor (Hardware and Software Development)

### Research Assistant @ Iran University of Science and Technology

Winter 2020

- Building and Controlling of an Inverted Pendulum Device  
In cooperation with Iran's National Elites Foundation

### Internet of Things Developer @ Pars System Energy

Sep 2019 – Mar 2020

- Designing a Temperature and Pressure Monitoring System of a Powerhouse

### Cooperative Education Student @ Iran University of Science and Technology

Fall 2019

- Routing and Controlling of Two-wheeled Mobile Robots and Avoiding Collisions by Using Model Predictive Control and Optimal Feedback Control  
In cooperation with Iran's National Elites Foundation

## TEACHING EXPERIENCE

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### Teaching Assistant @ Iran University of Science and Technology

- Adaptive Control Winter 2020  
In cooperation with Iran's National Elites Foundation

### Teaching Assistant @ Golpayegan College of Engineering, Isfahan University of Technology

- Industrial Automation Winter 2018
- Dynamics Fall 2017
- Design of Machine Components (1) Winter 2017
- Engineering Mathematics Fall 2016
- Engineering Technical Drawing (1) Winter 2016

## HONORS & AWARDS

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- 2 Times Winner of The Iran's National Elite Foundation Scholarship Award Jan 2019, Jan 2020
- 1st Rank, Achieving The Highest GPA Among all Mechanical Engineering (Control, Dynamics and Vibration) Graduate Students 2019  
Iran University of Science and Technology, Tehran, Iran.
- 1st Rank, Achieving The Highest GPA Among all University Mechanical Engineering Students 2014 – 2018  
Golpayegan University of Technology, Golpayegan, Isfahan, Iran.
- 1st Team Rank, MATLAB Programming Contest 2019  
Iran University of Science and Technology, Tehran, Iran.
- Entrance to Iran University of Science and Technology Without Entrance Exam for Master's Degree as a Recognized Student 2018

## PUBLICATIONS


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### Journals:

- **Constrained computational hybrid controller for Input Affine Hybrid Dynamical Systems.** A. Taghavian, A. Safi and E. Khanmirza, *Journal of the Franklin Institute*  
DOI: [10.1016/j.jfranklin.2024.107142](https://doi.org/10.1016/j.jfranklin.2024.107142) 2024
- **A review on benchmarks examples for hybrid dynamical systems controller synthesis to facilitate its selection process.** A. Safi, A. Taghavian and E. Khanmirza, *Space Science, Technology and Applications*  
DOI: [10.22034/jssta.2023.355411.1091](https://doi.org/10.22034/jssta.2023.355411.1091) 2023
- **Stability analysis of real-time hybrid simulation in consideration of time delays of actuator and shake table using delay differential equations.** Nasiri, M. and A. Safi, *Journal of Mechanical Science and Technology*  
DOI: [10.1007/s12206-019-0301-6](https://doi.org/10.1007/s12206-019-0301-6) 2019
- **Stability Analysis of Real-time Hybrid Simulation for a Multi-story Structure Considering Time-delay of Hydraulic Actuator.** Nasiri, M. and A. Safi, *Amirkabir Journal of Civil Engineering*  
DOI: [10.22060/CEEJ.2018.13547.5433](https://doi.org/10.22060/CEEJ.2018.13547.5433) 2019

### Conferences:

- **On the effectiveness of Stable Model Predictive vs. Adaptive Fuzzy Sliding Mode Method in synthesizing the controller for High-Speed Trains.** A. Safi, F. Namdarpour and E. Khanmirza, *9th RSI International Conference on Robotics and Mechatronics (ICRoM)*, Tehran, Iran  
DOI: [10.1109/ICRoM54204.2021.9663459](https://doi.org/10.1109/ICRoM54204.2021.9663459) 2021

- **A Criticism of Position Control of the Inverted Pendulum with Biased Angle Measurements Using Double-Loop PID.** A. Safi, and E. Khanmirza, *Advances in Science and Engineering Technology International Conferences (ASET)*, Dubai, United Arab Emirates  
DOI: [10.1109/ASET48392.2020.9118277](https://doi.org/10.1109/ASET48392.2020.9118277) 
- 2020

## PROJECTS

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- The design of dynamic predictive control for networked control systems subject to latency and packet loss
- Distributed control of second-order multi-agent systems with bidirectional meshed topology, considering communication delays
- Control design and implementation of a three tank experimental device
- Implementation of modern control and feedback linearization methods on quadrotors

## ENGLISH TEST

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- TOEFL (scheduled August 2025)  
Preparing for full professional score level

## SKILLS

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- **Type Setting**  
L<sup>A</sup>T<sub>E</sub>X • Microsoft Office
- **Programming Language**  
MATLAB • C++ (Arduino variant) • Python • Ladder Logic
- **Softwares**  
MATLAB • Visual Studio Code • Arduino IDE • Simulink • Catia • SolidWorks • Git • Proteus Design Suite
- **Other Skills**  
Programmable Logic Controller (PLC) • Communication Protocols (UDP, TCP/IP, Modbus, I2C) • Internet of Things (IoT) • WordPress • Adobe Photoshop • Adobe Premiere
- **Soft Skills**  
Dedication to Results • Eager to Learn • Effective Communication • Crafting Practical Solutions • Collaborative Team Member • Academic Writing Pro

## REFERENCES

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- **Dr. Esmaeel Khanmirza**  
Associate Professor in Mechanical Engineering  
M.Sc. Thesis Advisor, Iran University of Science and Technology  
 [Khanmirza@iust.ac.ir](mailto:Khanmirza@iust.ac.ir)
- **Dr. Mostafa Nasiri**  
Assistant Professor in Mechanical Engineering  
B.Sc. Thesis Advisor, Isfahan University of Technology  
 [m.nasiri@iut.ac.ir](mailto:m.nasiri@iut.ac.ir)

[CV compiled on 2025-07-15 for University Application]