Ali Safi

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SUMMERY

- Experienced Researcher in Mechanical and Control Engineering
- Expertise in Real-Life Control Theory Application and Electrical Circuit Design
- Highly skilled in MATLAB, Arduino and Python Programming, Fluent in English as a Second Language
- Strong Presentation and Problem-Solving Abilities, Committed to Delivering Results

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. Esmaeel Khanmirza
  - Focus: Hybrid dynamical systems, Hybrid control
  - GPA: 18.06 / 20

Golpayegan University of Technology, Golpayegan, 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

- Model Predictive Control (MPC)
- Linear Matrix Inequality (LMI)
- Sliding Mode Control (SMC)
- Adaptive Control
- Convex Optimization
- Hybrid Dynamical Systems
- Delay Effect Analysis
- Robotics and Mechatronics
- Internet of Things (IoT)
- Automation

RESEARCH EXPERIENCE

Research And Development Specialist — Jul 2023 – Present

- Dolfa Robotics
  - Principal Investigator: Maryam Jamali

Research And Development Engineer — Jan 2021 – Jun 2021

- Electro Samane Alvand (ELSA)
  - 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)
  - Chief Executive Officer: Mohsen Fayazi

Research Assistant — Winter 2020

- Iran University of Science and Technology
  - Building and Controlling of an Inverted Pendulum Device
  - Supervisor: Dr. Esmaeel Khanmirza

  In cooperation with Iran's National Elites Foundation

Internet of Things Developer — Sep 2019 – Mar 2020

- Pars System Energy
  - Designing a Temperature and Pressure Monitoring System of a Powerhouse
  - Chief Executive Officer: Dr. Saeed Jani

Cooperative Education Student — Fall 2019

- Iran University of Science and Technology
  - Routing and Controlling of Two-wheeled Mobile Robots and Avoiding Collisions by Using Model Predictive Control and Optimal Feedback Control
  - Supervisor: Dr. Esmaeel Khanmirza

  In cooperation with Iran's National Elites Foundation

TEACHING EXPERIENCE

Teaching Assistant Winter 2020

- Iran University of Science and Technology

  Adaptive Control

  In cooperation with Iran's National Elites Foundation

Teaching Assistant

- Golpayegan University of Engineering

  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

- 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

JOURNALS

[1] A. Safi, A. Taghavian and E. Khanmirza, A review on benchmarks Examples for dynamical hybrid systems controller synthesis to facilitate its selection process. *Space Science, Technology and Applications*, 2023. 2(2): p. 115-134. (Persian)

[2] Nasiri, M. and A. Safi, Stability analysis of real-time hybrid simulation in consideration of time delays of actuator and shake table using delay differential equations. *Journal of Mechanical Science and Technology*, 2019. 33(4): p. 1489-1499.

[3] Nasiri, M. and A. Safi, Stability Anaysis of Real-time Hybrid Simulation for a Multi-story Structure Considering Time-delay of Hydrolic Actuator. *Amirkabir Journal of Civil Engineering*, 2019. 51(3): p. 391-400. (Persian)

CONFERENCES

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

[5] A, Safi, F. Namdarpour and E. Khanmirza. On the effectiveness of Stable Model Predictive vs. Adaptive Fuzzy Sliding Mode Method in synthesizing the controller for High-Speed Trains. in *2021 9th RSI International Conference on Robotics and Mechatronics (ICRoM)*, Tehran, Iran, Islamic Republic of. 2021, pp. 293-300

PROJECTS

- Constrained optimization-based control of nonlinear input affine systems
  - Under review paper submitted to *Journal of Dynamic Systems Measurement and Control*
- The design of dynamic predictive control for networked control systems subject to latency and packet loss
  - Under review paper submitted to *Journal of systems and control engineering*
- Constrained computational hybrid controller for input affine hybrid dynamical systems
  - Under review paper submitted to *Journal of the Franklin Institute*
- 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

- Full Professional Proficiency

The TOEFL exam is scheduled for December 2023

SKILLS

- *Type Setting*
  LaTeX • Microsoft Office
- *Programming Language*
  MATLAB • C++ (Arduino variant) • Python • Ladder Logic
- *Softwares*
  Git • MATLAB • Visual Studio Code • Arduino IDE • Simulink • Catia • SolidWorks • Proteus Design Suite
- *Other Skills*
  Communication Protocols (UDP, TCP/IP, Modbus, I2C) • Programmable Logic Controller (PLC) • 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

- **Dr. Esmaeel Khanmirza**
  Associate Professor in Mechanical Engineering
  Iran University of Science and Technology
  Khanmirza@iust.ac.ir • +98 (21) 7724-0469
- **Dr. Mostafa Nasiri**
  Assistant Professor in Mechanical Engineering
  Golpayegan University of Technology
  Nasiri@gut.ac.ir

[*CV compiled on 2023-09-24 for University Application*]