

## Mostafa Nesaieian

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### RESEARCH INTERESTS

- Machine Learning
- Control Theory
- Applied Mathematics
- Optimization

### EDUCATION

#### **Amirkabir University of Technology (Tehran Polytechnic)**

*Bachelor of Science*, Electrical Engineering:

2020 - Present

- GPA: 16.44/20 - 3.44/4

Total: 130 credits

#### **National Organization for Development of Exceptional Talents (Sampad)**

*High School Diploma*, Mathematics and Physics:

2014 - 2020

- GPA: 19.68/20 - 3.96/4

### RESEARCH EXPERIENCE

#### **Research Internship** at Artificial Intelligence and Data Analytics (AIDA) Lab

Iranian Research Institute for Information Science and Technology (IranDoc)

Hybrid

Oct 2024 - Present

- Researching on Multi-task learning for histology image segmentation under supervision of Dr. [Azadeh Fakhrazadeh](#).

#### **Bachelor Thesis: Neural network based state estimation using Lie derivative** 2024

- This thesis considers the problem of state observation for nonlinear dynamics. The problem with model-based observer is due to the need of solving PDEs, this thesis is using online learning and considering the observer dynamics as a Chen-Fliess series. The proposed approach is demonstrated by a oscillating dynamic. ([Link](#))

#### **Research Assistant** at Digital Transformation Lab

Research Institute of Petroleum Industry (RIPI)

part-time

Mar 2024 - Present

- Researching on Neural Network architectures for Object detection and Face Recognition under supervision of Dr. [Saeid Shokri](#).

#### **Research Assistant** at school of Electrical Engineering

Amirkabir University of Technology (Tehran Polytechnic)

Full-time

Dec 2023 - Present

- Researching various state estimation methods under the supervision of Dr. [Farzaneh Abdollahi](#), with a focus on comparing their strengths and weaknesses in diverse applications, particularly exploring Geometric methods for state estimation purposes.

### PUBLICATION

- Mostafa Nesaieian, S. Vahid Naghavi, **Neural Network-Based Model Predictive Control for CSTR: A Comparative Study of Output Layer Architectures.**, In preparation

### TEACHING

#### • **Calculus 2: Teaching Assistant**

Jan - Jun 2023

Amirkabir University of Technology (Tehran Polytechnic)

- Designing Homeworks and assisting students ([GitHub-Link](#)) for 2n semester 2023 in Department of Mathematics and Computer Science.

### HONORS AND AWARDS

- Ranked 590 in the National University Entrance Exam among 160,000 students.

## WORK EXPERIENCE

**Ai Researcher:** Research Institute of Petroleum Industry (RIPI)    Part-time    Mar 2024 - Present

- Designing and developing intuitive and responsive front-end interfaces for web application using React.
- Validation, evaluation and help for backend project using Flask framework.
- Image processing, utilizing neural network to create models for object detection.

**Image Processing:** Fater Afkar Fanavar    Part-time    Sep 2023 - Dec 2023

- Working on deepface model, Vgg16 for image processing.
- Working on face vectorizing methods.

**Summer Internship :** Fater Afkar Fanavar    Jul 2023 - Aug 2023

- Designing controllers via python (OpenOPC module) for pilot plant.
- Instrumentation, Simulating and processing sensors.
- Image processing. ([Link](#))

## PROJECTS

**MSE vs RNN :**    May 2023

- A comparison study of a Recurrent neural network (RNN) model and a method from this [paper](#) published by [S. Vahid Naghavi](#) for a chaotic system. ([Link](#))

**VHDL simulation of Automated Teller Machine :**    Apr 2022

- Design, implement, verify, and test an Automated Teller Machine based on the following specification: The teller machine should provide the following services to the user (operator): Balance Inquiry (BAL), Cash Withdrawal (COUT), Deposit Cash (CIN), Deposit a Check (CHEC), Change PIN (CPIN) ([Link](#))

## SKILLS

**Programming Languages:** Python, C/C++

**Frameworks and Tools:** Tensorflow, Scikit-Learn, Pandas, Numpy, Matplotlib, Git, MATLAB, Flask, React

**Development:** Linux, PostgreSQL

## LANGUAGES

**English:** Fluent

**Persian:** Native