

# Mohammad Javad Rajabi

BACHELOR STUDENT OF COMPUTER ENGINEERING AT AMIRKABIR UNIVERSITY OF TECHNOLOGY (AUT)

Tehran, Iran

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## Research Interests

Computer Vision, Machine Learning, Image Processing, Trustworthy ML

## Education

### Amirkabir University of Technology (Tehran Polytechnic)

Tehran, Iran

B.S. IN COMPUTER ENGINEERING (MAJOR IN ARTIFICIAL INTELLIGENCE)

September 2019 – PRESENT

- Total GPA: **3.88/4 (18.25/20)**
- GPA over the last two semesters: **4/4 (19.4/20)**
- Advisor: **Prof. Ahmad Nickabadi**

### Shahid Ejei High School (SAMPAD)

Isfahan, Iran

DIPLOMA, MATHEMATICS AND PHYSICS

September 2016 – July 2019

- National Organization for Development of Exceptional Talents (NODET).

## Publications & Submissions

### Enhancing Landmark Detection in Cluttered Real-World Scenarios with Vision Transformers

Arxiv (preprint)

MOHAMMAD JAVAD RAJABI, MORTEZA MIRZAI, AHMAD NICKABADI

August 2023

### [A Paper In the Subject Of Image Super Resolution]

ALIREZA ESMAELI ZEHI, MOHAMMAD JAVAD RAJABI, HOSSEIN ZARE DAR, M. OMAIR AHMAD

August 2023

- Under Blind review, Thirty-Eighth AAAI Conference on Artificial Intelligence (AAAI 2024)

### Mitigating Bias: Enhancing Image Classification by Improving Model

Arxiv (preprint)

### Explanations

RAHA AHMADI\*, MOHAMMAD JAVAD RAJABI\*, MOHAMMAD KHALOOIE, MOHAMMAD SABOKROU

July 2023

- Under review, Asian Conference on Machine Learning (ACML) 2023

## Research Experience

### Contributor to Collaborative Research Projects

#### UNDER THE SUPERVISION OF DR. ALIREZA ESMAELI ZEHI

March 2023 – Now

- Working on a video-to-video translation project with a primary emphasis on enhancing temporal and spatial consistency through the utilization of optical flow techniques.
- Collaborated in implementing an image super-resolution network leveraging segmentation and using transformers with correlated cross-attention architecture to restore high-quality images from low-quality images.

### Research Assistant At Amirkabir University of Technology, SML Lab

Tehran, Iran

#### UNDER THE SUPERVISION OF PROF. AHMAD NICKABADI

November 2022 – Now

- Worked on an alternative strategy to mitigate the detrimental impact caused by irrelevant objects, such as humans and cars, in landmark images. Our research concentrated on evaluating the efficacy of vision transformers in tackling the issue of occluded objects in visual place recognition tasks. To minimize their influence, we implemented advanced masking techniques to conceal these distracting elements from the model's attention.
- Paper: **Enhancing Landmark Detection in Cluttered Real-World Scenarios with Vision Transformers**

### Research Intern At Institute for Research in Fundamental Sciences (IPM)

Tehran, Iran

#### UNDER THE SUPERVISION OF DR. SABOKROU

June 2022 – June 2023

- Proposed a novel approach that encourages the model to focus on the primary object of the image and mitigates biases in image classification. This approach leads to an improvement in classification accuracy, reduced sensitivity to background noise, and enhanced model interpretability.
- Paper: **Mitigating Bias: Enhancing Image Classification by Improving Model Explanations**

## Teaching Experiences

|             |   |              |
|-------------|---|--------------|
| Spring 2023 | <b>Information Retrieval</b> , Prof. Ahmad Nikabadi                 | Tehran, Iran |
| Spring 2023 | <b>Robotics</b> , Prof. Mahdi Javanmardi                            | Tehran, Iran |
| Spring 2023 | <b>Principles of Cloud Computing</b> , Prof. S.Ahmad Javadi         | Tehran, Iran |
| Fall 2022   | <b>Information Retrieval</b> , Prof. Ahmad Nikabadi                 | Tehran, Iran |
| Fall 2021   | <b>Algorithm Design</b> , Prof. Alireza Bagheri                     | Tehran, Iran |
| Fall 2020   | <b>Fundamentals of Computer Programming</b> , Prof. Hossein Zeinali | Tehran, Iran |

## Projects

- Video-To-Video Translation On Viper Dataset
- Search Engine (Information Retrieval, Indexing & Tokenizing)
- Projects And Assignments Of Robotics Course Based On ROS
- Mario Solver (A Genetic Algorithm To Pass A Level Of Super Mario Game)
- AI Search Algorithms
- XV6 Scheduling (OS Project)

## Skills

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|--|--|
| <b>Programming</b>                       | Python, JAVA, C/C++, LaTeX   |
| <b>Machine Learning Tools</b>            | PyTorch, OpenCV, scikit-learn, NumPy, pandas, matplotlib, Tensorflow |
| <b>Web Development</b>                   | HTML, CSS, Django, Flask   |
| <b>Distribution and Deployment Tools</b> | Kubernetes, Docker   |

## Relevant Coursework

|             |  |             |
|-------------|--|-------------|
| March 2023  | <b>Probabilistic Graphical Models (PGM)</b> , Daphne Koller, Stanford University               | Certificate |
| August 2022 | <b>Generative Adversarial Networks (GANs) Specialization</b> , Sharon Zhou, DeepLearning.AI    | Certificate |
| August 2022 | <b>Machine Learning Specialization</b> , Andrew Ng, DeepLearning.AI                            | Certificate |
| July 2022   | <b>Deep Learning Specialization</b> , Andrew Ng, DeepLearning.AI                               | Certificate |
| April 2022  | <b>ROS Comprehensive Training Course</b> , Department of Mathematics and Computer Science, AUT | Certificate |

## Volunteer Experiences

### Amirkabir Artificial Intelligence Competitions (AAIC)

HEAD OF THE EXECUTIVE TEAM UNDER THE SUPERVISION OF PROF. AHMAD NICKABADI

May 2023

### Comprehensive Engineering Events Of Department of Computer Engineering

RESPONSIBLE FOR EVENT COORDINATION AND GUEST INVITATIONS

july 2021 - June 2022

### Amirkabir Artificial Intelligence Summer Summit(AAISS)

MEMBER OF THE SCIENTIFIC GROUP AND STAFF OF THE EVENT

August 2021

## Languages

|                |   |
|----------------|---|
| <b>Persian</b> | Native  |
| <b>English</b> | Advanced, TOEFL: Scheduled For September 10th |

## References

### Dr. Alireza Esmaeilzahi, Postdoctoral Fellow

UNIVERSITY OF TORONTO

- Email: alireza.esmaeilzahi@gmail.com

### Dr. Ahmad Nickabadi, Assistant Professor

COMPUTER ENGINEERING DEPARTMENT, AMIRKABIR UNIVERSITY OF TECHNOLOGY

- Email: nickabadi@aut.ac.ir

### Dr. Mohammad Sabokrou, Staff Scientist (AI researcher and consultant)

OKINAWA INSTITUTE OF SCIENCE AND TECHNOLOGY

- Email: sabokro@gmail.com