

# Ainaz Eftekhar

PH.D. STUDENT OF COMPUTER SCIENCE AND ENGINEERING AT UNIVERSITY OF WASHINGTON

Seattle, WA

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## Research Interests

Embodied-AI, Reinforcement Learning, Computer Vision, Cognitive Science, Cognitively-Inspired AI

## Education

### University of Washington

PH.D. IN COMPUTER SCIENCE AND ENGINEERING

Seattle, US

September 2022 - PRESENT

- GPA: 4.0/4.0, Advisor: Prof. Ali Farhadi and Prof. Ranjay Krishna.

### Ecole Polytechnique Federale de Lausanne (EPFL)

VISITING STUDENT RESEARCHER IN VILAB

Lausanne, Switzerland

September 2021 - August 2022

- Advisor: Prof. Amir Zamir.

### Sharif University of Technology

B.S. IN COMPUTER ENGINEERING

Tehran, Iran

September 2017 - August 2022

- GPA: 19.22/20, Ranked 8th among 120 Students.

## Publications

### Selective Visual Representations Improve Convergence and Generalization for Embodied-AI

Arxiv (in submission)

AINAZ EFTEKHAR\*, KUO-HAO ZENG\*, JIAFEI DUAN, ALI FARHADI, ANI KEMHAVI, RANJAY KRISHNA.

November 2023

### Omnidata: A Scalable Pipeline for Making Multi-Task Mid-Level Vision Datasets from 3D Scans

ICCV 2021

AINAZ EFTEKHAR\*, ALEXANDER SAX\*, JITENDRA MALIK, AMIR ZAMIR.

October 2021

### Puzzle-AE: Novelty Detection in Images through Solving Puzzles

Arxiv (preprint)

MOHAMMADREZA SALEHI, AINAZ EFTEKHAR\*, NIOUSHA SADJADI\*, MOHAMMAD HOSSEIN ROHBAN, HAMID R. RABIEE

September 2020

## Research Experience

### University of Washington

Seattle, US

RESEARCH ASSISTANT, SUPERVISOR: PROF. ALI FARHADI, PROF. RANJAY KRISHNA

September 2022 - Present

- Project: Selective Visual Representations for Embodied-AI
- Learning task-driven visual representations for embodied-AI by employing a “bottleneck” between high-dimensional sensory inputs and the agent’s actions. A small learnable codebook module selectively filters out visual stimuli based on the embodied task to create a more task-driven visual representation.
- Paper: Selective Visual Representations Improve Convergence and Generalization for Embodied-AI

### Ecole Polytechnique Federale de Lausanne (EPFL)

Lausanne, Switzerland

RESEARCH ASSISTANT, SUPERVISOR: PROF. AMIR ZAMIR

September 2020 - August 2022

- Paper accepted at ICCV 2021
- Created a pipeline to generate “steerable” multi-task vision datasets by parametrically sampling and rendering 3D scans, providing a pathway to explore various data sampling effects and create better vision datasets
- Paper: Omnidata: A Scalable Pipeline for Making Multi-Task Mid-Level Vision Datasets from 3D Scans

## Sharif University of Technology

RESEARCH ASSISTANT, SUPERVISOR: **PROF. MOHAMMAD HOSSEIN ROHBAN**

*Tehran, Iran*

*September 2019 - September 2020*

- Worked on different approaches of Anomaly/Novelty Detection in images and videos with a focus on self-supervised learning methods and adversarial robust training.
- Paper: **Puzzle-AE: Novelty Detection in Images through Solving Puzzles**

## Indian Institute of Technology

SUMMER INTERN, SUPERVISOR: **PROF. ABIR DAS, PROF. PABITRA MITRA**

*Kharagpur, India*

*July 2019 - September 2019*

- Worked on reducing the effect of severe dataset imbalance in image classification by training an end-to-end CycleGAN-Classifer architecture to produce additional training examples from the minority classes using GANs.

## Honors & Awards

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|------|---|------------------------------|
| 2021 | <b>EPFL Summer Research Fellowship</b> , Ecole polytechnique federale de Lausanne               | <i>Lausanne, Switzerland</i> |
| 2020 | <b>Top 5% Academic Ranking</b> , Sharif University of Technology                                | <i>Tehran, Iran</i>          |
| 2017 | <b>Ranked 92<sup>th</sup> in Iranian Nationwide University Entrance Exam</b> , Among +300,000   | <i>Tehran, Iran</i>          |
| 2016 | <b>Bronze medal</b> , Iranian National Math Olympiad  | <i>Tehran, Iran</i>          |
| 2015 | <b>Bronze medal</b> , Iranian National Math Olympiad  | <i>Tehran, Iran</i>          |
| 2013 | <b>Gold Medal in the 9th International Mathematics Contest</b> , IMC (Singapore), [certificate] | <i>Singapore</i>             |

## Skills

<b>Programming</b>	Python, Java, C/C++, LaTeX
<b>Machine Learning Tools</b>	PyTorch, OpenCV, scikit-learn, NumPy, pandas, matplotlib
<b>Distribution and Deployment Tools</b>	Kubernetes, Docker, Github's CI/CD
<b>Languages</b>	Persian (native), English (advanced, TOEFL score:109), French (Basic)

## Teaching Assistant

- |      |   |                     |
|------|---|---------------------|
| 2024 | <b>Deep Learning</b> , Prof. Ranjay Krishna                       | <i>Seattle, US</i>  |
| 2020 | <b>Discrete Structures</b> , Prof. Hamid Zarrabi-Zadeh            | <i>Tehran, Iran</i> |
| 2020 | <b>Data Structures and Algorithms</b> , Prof. Saber Salehkaleybar | <i>Tehran, Iran</i> |
| 2020 | <b>Logical Circuits</b> , Prof. Shaahin Hessabi                   | <i>Tehran, Iran</i> |
| 2019 | <b>Artificial Intelligence</b> , Prof. Mohammad Hossein Rohban    | <i>Tehran, Iran</i> |
| 2019 | <b>Discrete Structures</b> , Prof. Hamid Zarrabi-Zadeh            | <i>Tehran, Iran</i> |
| 2018 | <b>Advanced Programming</b> , Dr. Mahdi Mostafazadeh              | <i>Tehran, Iran</i> |

## Relevant Coursework

### University of Washington

- Deep Robotic Learning (CSE 599 G), Deep Learning (CSE 493G1), Computational Neuroscience (CSE 528 A)

### Sharif University of Technology

- Digital Image Processing (graduate), Artificial Intelligence, Machine Learning, Signals and Systems, Advanced Information Retrieval, Linear Algebra, Probability and Statistics, Design of Algorithms, Data Structures

### Online MOOCs

- CS231n: Convolutional Neural Networks for Visual Recognition by Stanford, Deep Learning Specialization by deeplearning.ai, Machine Learning by Stanford-Online.

### Machine Vision and Learning Winter School

- Brain Engineering Center and Cognitive Science School, IPM, Iran [certificate]