Ainaz Eftekhar

PhD. Student of Computer Science and Engineering at Universtiy of Washington

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Research Interests

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

Education

Univeristy of Washington — *Seattle, US*

PH.D. IN COMPUTER SCIENCE AND ENGINEERING — *September 2022 - PRESENT*

- Advisor: **Prof. Ali Farhadi** and **Prof. Ranjay Krishna.**

Ecole Polytechnique Federale de Lausanne (EPFL) — *Lausanne, Switzerland*

VISITING STUDENT RESEARCHER IN VILAB — *September 2021 - August 2022*

- Advisor: **Prof. Amir Zamir.**

Sharif University of Technology — *Tehran, Iran*

B.S. IN COMPUTER ENGINEERING — *September 2017 - August 2022*

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

Publications

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: Hypothesis-Testing by an Embodied Agent
- Investigating the ability of modern RL agent to hypothesize the rules of the world from observations, confirm the rules from interactions and to apply the learned rules to downstream embodiment tasks.

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 — *Tehran, Iran*

RESEARCH ASSISTANT, SUPERVISOR: **PROF. MOHAMMAD HOSSEIN ROHBAN** — *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 *Kharagpur, India*
Summer Intern, Supervisor: **Prof. Abir Das, Prof. Pabitra Mitra** *July 2019 - September 2019*

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

Honors & Awards

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

Skills

Programming	Python, Java, C/C++, LaTeX
Machine Learning Tools	PyTorch, OpenCV, scikit-learn, NumPy, pandas, matplotlib, Tensorflow
3D Software Tools	Blender, Meshlab
Distribution and Deployment Tools	Kubernetes, Docker, Github's CI/CD
Languages	Persian (native), English (advanced, TOEFL score:109), French (Basic)

Teaching Assistant

2020	**Discrete Structures**, Prof. Hamid Zarrabi-Zadeh	*Tehran, Iran*
2020	**Data Structures and Algorithms**, Prof. Saber Salehkaleybar	*Tehran, Iran*
2020	**Logical Circuits**, Prof. Shaahin Hessabi	*Tehran, Iran*
2019	**Artificial Intelligence**, Prof. Mohammad Hossein Rohban	*Tehran, Iran*
2019	**Discrete Structures**, Prof. Hamid Zarrabi-Zadeh	*Tehran, Iran*
2018	**Advanced Programming**, Dr. Mahdi Mostafazadeh	*Tehran, Iran*

Relevant Coursework

University of Washington

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

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]**