

# Amirhossein Mesbah

GRADUATE STUDENT · RESEARCH ASSISTANT

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“Be the change that you want to see in the world.”

## Education

### University of Tehran

M.SC. IN ARTIFICIAL INTELLIGENCE AND ROBOTICS

- Overall GPA: 19.48/20 (4/4)

Tehran, Iran

2020 - present

### University of Tabriz

B.S. IN COMPUTER ENGINEERING

- Thesis: news scrapping dashboard using Scrappy and Django frameworks for news clustering
- Overall GPA: 18.23/20 (3.79/4)
- 3rd Rank among Graduated Bachelor Students based on Overall GPA among 70 students

Tabriz, Iran

2016 - 2020

## Research Interests

### Reinforcement Learning

Social Reinforcement Learning

### Deep Learning

Theory of Deep Learning

### Explainable AI

Adversarial Attacks

### Computational Neuroscience

System Neuroscience

## Research Experience

### Research Assistant

COGNITIVE SYSTEMS LAB, UNIVERSITY OF TEHRAN

- Compared different methods of Social Reinforcement Learning in a systematic review. (Link)
- Exploring the role of Free Energy and Sub-spaces to find bottleneck states faster.

Tehran, Iran

2021 - present

## Publications

### Who to follow: A Policy-gradient Social Reinforcement learning Method for Multi-armed bandit

Reinforcement Learning

B.KARIMIAN, \*A.MESBAH, \*E.MIRZAEI, M.NILI, R.HOSSEINI, P.SHARIATPANAH (\* EQUAL CONTRIBUTION)

2022

- Submitted

## Teaching Experience

### Regular Teaching Assistant

Neuromatch Academy

UNITED STATES (ONLINE)

2022

- Selected as TA for full-time supervision on the learning of 16 students from different countries, and leading 2 research group projects during 3 weeks in English for Computational Neuroscience.

### Mentor

HooshBaaz Summer School

UNIVERSITY OF TEHRAN, TEHRAN, IRAN

2022

- Group collaboration with 7 other mentors for educating 80 students during 14 workshops on Data Analytics and Machine Learning.

### Advanced Deep Learning Teaching Assistant

Dr. Mohammad Amin Sadeghi

SCHOOL OF ELECTRICAL AND COMPUTER ENGINEERING, COLLAGE OF ENGINEERING, UNIVERSITY OF TEHRAN, TEHRAN, IRAN

2022

- Defining 4 advanced projects with colabration of 3 other TAs.

### Interactive Learning Teaching Assistant

Dr. Majid Nili Ahmadabadi

SCHOOL OF ELECTRICAL AND COMPUTER ENGINEERING, COLLAGE OF ENGINEERING, UNIVERSITY OF TEHRAN, TEHRAN, IRAN

2021

- Reviewed Final Projects of over 10 groups of students and designed homework.

- Designed several assignments for more than 100 students in a 2 groups.

## Projects

### BigData Projects

2022

- Launching a real-time data pipeline on the Crypto and Stocks market
- Using Apache Spark for NLP, Social Networks Analysis and dimensionality reduction tasks

### Neuroscience Projects

2022

- Implementing multiple Neural Dynamic models of single cell and population models
- Evaluating Discrete-Time Neural Signals
- Studying Continuous-Time Neural Signals for different data modalities
- Analyzing behavioral data of subjects collected by designing a Psychopy task
- Investigating the role of Imitation and Emulation in Decision Making

### Deep Learning & Machine Learning Projects

2022

- Utilizing federated learning methods (FedAVG, FedADMM) for image segmentation task
- Training Distributed Deep Neural Networks for Fashion MNIST classification
- Implementing Generative Cooperative Network
- Setting up a Machine translation system with transformers (English to Persian)
- Implementing an Image captioning Deep Network
- Performing Semantic segmentation on Camvid Dataset
- Detecting Parkinson disease using signals of speech data with ensemble learning

### Reinforcement Learning Projects

2022

- Implementing Multi-Agent Reinforcement learning algorithms for grid Environment
- Training Deep Reinforcement Learning Agents for turning the forest fires off
- Finding the best route in a network with multi armed bandit algorithms

## Skills

### Theoretical Experience

Statistical Machine learning, Reinforcement Learning, Deep Learning, Design of Algorithms and Databases

### Programming & Scripting

Python, SQL, HTML, CSS, JavaScript, Matlab, C, C++ and Java and  $\text{\LaTeX}$ 

### Libraries and Frameworks

PyTorch, Tensorflow, Keras, Numpy, Scipy, Scikit-learn, Pandas, BeautifulSoup, NLTK, Opencv, Django and Scrapy

## Languages

### English

Fluent

### Persian

Native

### Turkish

Native

## Academic Courses

### Principles of cognitive science, 19.49/20

2022

### Massive Data Analysis and Systems, 20/20

2022

### Data Analysis, 19.5/20

2021

### Distributed Optimization and Learning (Special Topics in Control Eng), 19/20

2021

### Biological Computing, 19.6/20

2021

### Interactive Learning (Special Topics in Control Engineering 1), 18.5/20

2020

### Machine Learning, 19.9/20

2020