Mohammad Mashreghi

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EDUCATION

University of Tehran **Sep 2020 – Dec 2024**
B.Sc in Electrical Engineering *Tehran, Iran*
- GPA: 18.07/20 (3.91/4)

University of Tehran **Sep 2022 – Dec 2024**
Minor in Management *Tehran, Iran*
- GPA: 17.92/20

Derkhshande Sarraf High School **Sep 2017 – Jun 2020**
Highschool Diploma, Mathematics *Yazd, Iran*
- GPA: 19.07/20

Articles

Risk Sensitivity in Markov Games and Multi-Agent Reinforcement Learning: A Systematic Review
Under review.(Also arxiv)

Resilient Federated Vision Transformer for Alzheimer's Disease Prediction with Brain Imaging Data
ready to submit

RESEARCH INTERESTS

- Federated Learning
- Reinforcement Learning
- Finance
- Adversarial ML
- Graph Neural Network
- Game Theory & Dynamic Systems

RESEARCH EXPERIENCES

Internship (Smart Network Laboratory) **Jul 2023**
- Identified suitable voice call packages for each user and designed new packages based on user behavior, considering package price, volume, and duration, while addressing the challenge of limited user data for clustering by extracting additional features and creating new clusters based on package duration.

Work Experience (Analyzer and programmer) **Jan 2023**
- Initially conducted market analysis using basic methods and indicators within the cryptocurrency and forex markets, then developed Python code to automate buying and selling activities, and eventually created an alert bot to provide notifications of market changes based on various strategic plans for different time frames.

Research Experience (Smart Network Laboratory) **Feb 2024**
- Reviewed various distributed RL methods applied to traffic signal control, focusing on assumptions like loss functions and system robustness against attacks, and evaluated the effectiveness of each approach in optimizing traffic flow and resilience under adversarial conditions.

Teaching Assistant
- Served as a TA for several courses at the University of Tehran, including Linear Control Systems, Engineering Mathematics, Digital Systems 2, Electrical Introduction, Engineering Probability and Statistics, and Distributed Optimization and Learning.

Volunteer Work (Flat Earth)
- Collaborated as part of the team responsible for marketing, ticket sales, and advertising to promote events and increase attendance.

SKILLS

Programming Languages: Python, C/C++, MATLAB, Verilog, LaTeX
Frameworks & Libraries: PyTorch, TensorFlow, PyTorch, Torchattack,Torchvision, scikit-learn, Simulink
Hardware & System Design: STM32Cube, ModelSim, Intel Quartus Prime, Ppice
Soft Skills: Team work, Social Communication, Adaptability, Critical Thinking
Language: Persian: Native, **English:** Advanced (IELTS: 6.5 overall – S6.5, R6, W6, L7. GRE on 11 Nov.)

HONORS AND AWARDS

- Ranked **the 8th** in control engineering among 35, University of Tehran.
- Ranked in the **the top 20 (17th)** among 120 Electrical Engineering B.Sc. students, University of Tehran.
- Ranked among **the top 0.6%** in approximately 155,000 participants in the Nationwide Iranian Universities Entrance Exam, 2020.

RELEVANT COURSES

- **Engineering Probability and Statistics** (19.59/20)
- **Engineering Mathematics** (20/20)
- **Machine Learning** (Grad. Course) (18.7/20)
- **Distributed Optimization and Learning** (Grad. Course)(19.30/20)
- **Game Theory**(Grad. Course)(17.25/20)
- **Modern Control Systems** (17.9/20)
- **Advanced Programming** (19.70/20)
- **Linear Algebra** (16.75/20)
- **Data Structures and Algorithms** (20/20)
- **Operation Research** (Current Semester)
- **Deep Learning** (Neuromatch Academy)

NOTABLE PROJECTS

Machine Learning & Optimization

- **Distributed Cooperative Competitive Multi Agent Reinforcement Learning in Markov Games** | Implementiong Q-learning, Actor-critic, Minimax, Belief based algo, Independent Q-learning, and Disturbuted Q-learning, DDPG, MADDPG. (Distributed Optimization and Learning)
- **Robust-Federated-Primal-Dual-Learning-for-Android-Malware-Classification-via-Adversarial-Robustness** | In this project, the goal is to achieve robust federated learning for Android malware classification through adversarial robustness(FGSM-PGD). (Distributed Optimization and Learning)
- **Familiar with ADMM and dynamic programming through course exercises in Distributed Optimization and Learning, using the CVXPY and YALMIP framework.**
- **Detect fake picture with ML** | In this project, fake and real pictures of mountains, sea, and forests are used to detect fake ones. (Machine Learning)
- **Familiar with neural networks like LSTMs, RNN, FFNN and their applications. (Machine Learning)**
- **TRPCA and SVD-based digital Watermarking** | Implementing Tensor Robust Principal Component Analysis and digital Watermarking with python. (Linear Algebra)
- **A presentation about A Unified Game-Theoretic Approach to Multiagent Reinforcement Learning article** | (Game Theory)
- **Implementation of Transfer Learning, Object Detection, Image Captioning, Intent Classification, Extractive QA System, Vision Transformer Image Classification** | learning basics and applications of deep learning and neural networks in a different area (Deep learning)
- **Sequential Data Processing with RNN** | (Neuromatch Academy)

Control Systems

- **Designing PID Controller for non-Linear System** (Linear Control Systems)
- **Electromagnetic Levitation System Modeling** | A simulation in Matlab and tested in real device. (Modern Control)
- **Signal Processing with Designing Filters, ARM Programming with STM32IDE** (Instrumentation)

Data Science

- **Working with heaps and Tress such as B-Tree, Binomial heap** (Data Structure and Algorithms)
- **Finding Optimal Paths in Graph with DFS and BFS** (Data Structure and Algorithms)

Proramming

- **PacMan game** | A game in CMD.(Introduction to Computer Systems and Programming)
- **Trade Bot** | A Python script that retrieves data from TradingView, analyzes it, and sends buy and sell requests to brokers. (Work experience)
- **Designing an online market** | An online market designed using C++ with various facilities.(Advanced Programming)

References (upon request)

- **Prof. Hamed Kebriaei**
- **Prof. Saeed Safari**
- **Prof. Mohammad Reza Nayeri**
- **Prof. Abolfazl Yaghmaei**