ATEFEH MOLLABAGHER

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PROFILE

Ph.D. student in ECE at UC San Diego working on recommendation systems and reactive user behavior. Hands-on experience with deep learning, reinforcement learning, and transformer models. Seeking a summer internship to apply machine learning techniques to real-world problems.

EDUCATION

University of California, San Diego   *Sep 2023 – Expected Jun 2028*
Ph.D. in Electrical and Computer Engineering (Machine Learning and Data Science)
Focus: Machine Learning, Recommendation Systems, Game Theory. GPA: 3.73/4.0

University of California, San Diego   *Sep 2023 – Jun 2025*
M.S. in Electrical and Computer Engineering (Machine Learning and Data Science), GPA: 3.73/4.0

University of Tehran   *Sep 2018 – Jul 2023*
B.S. in Electrical Engineering, GPA: 3.8/4.0

PUBLICATIONS

A. Mollabagher, P. Naghizadeh. "Reactive Users vs. Recommendation Systems: An Adaptive Policy to Manage Opinion Drifts". *Under review at IEEE Transactions on Control of Network Systems.*

A. Mollabagher, P. Naghizadeh. "The Feedback Loop Between Recommendation Systems and Reactive Users". *American Control Conference (ACC'25).*

SKILLS

Machine Learning & AI: Transformers, CNNs, RNNs, Reinforcement Learning (Q-Learning, Policy Gradients, Multi-Agent RL, Bandits), Recommendation Systems (Collaborative filtering, Matrix factorization, Bandit-based recommendation)
Data Science: Python, PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy, Data Wrangling, Feature Engineering, Hypothesis Testing, Visualization (Matplotlib, Seaborn, Plotly)
Mathematical Foundations: Probability & Statistics, Convex Optimization, Random Processes
Tools & Programming: Git, LaTeX, MATLAB, R

RESEARCH EXPERIENCE

The Feedback Loop Between Recommender Systems and Reactive Users   *UC San Diego*

- Modeled user–recommender dynamics to study opinion drift under bandit personalization; designed deterministic and stochastic mitigation strategies.
- Proved convergence properties for deterministic strategies and extended the model to stochastic user behavior to evaluate robustness of mitigation techniques.

Multi-Agent Reinforcement Learning (MARL)   *UC San Diego*

- Reviewed theoretical and algorithmic foundations of decentralized MARL under communication constraints and partial observability.
- Analyzed actor-critic architectures and cooperative learning dynamics, strengthening knowledge of policy gradients and multi-agent coordination.

B.S. Thesis: Federated Deep Reinforcement Learning for Traffic Signal Control   *University of Tehran*

- Proposed a decentralized framework using Federated Deep Reinforcement Learning (FDRL) to optimize traffic signal timing while preserving data privacy.

- Implemented Q-learning and DQN in SUMO/TraCI; reduced average vehicle waiting time versus centralized methods.

APPLIED PROJECTS

Semantic Segmentation using FCNs and Transfer Learning *CSE 251B, Winter 2025*
Trained Fully Convolutional Networks (FCNs) on PASCAL VOC 2012 for semantic segmentation. Achieved mean IoU of **7.24%** with ResNet-34 using transfer learning and class-balanced loss; U-Net achieved **7.1%** mean IoU and **75.0%** pixel accuracy.

Contrastive Fine-Tuning of BERT for Scenario Classification *CSE 251B, Winter 2025*
Fine-tuned BERT on the Amazon MASSIVE dataset using SimCLR and SupContrast losses. Achieved **82.4%** test accuracy over 18 classes with LoRA and dropout augmentations.

Shakespearean Text Generation using Character-Level LSTMs *CSE 251B, Winter 2025*
Trained LSTM models on the TinyShakespeare dataset to generate text sequences. Compared teacher-forced and free-running decoding with different temperature settings.

Sentiment Analysis with Mamba2 and Transformer Models *CSE 251B Final Project, Winter 2025*
Adapted the pretrained Mamba2 model for sentiment classification on the GoEmotions Reddit dataset. Applied LoRA fine-tuning under GPU constraints using attention masking and partial freezing. Conducted comparative evaluation against BERT and RoBERTa; analyzed trade-offs between model size, accuracy, and trainability.