

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	<i>Sep 2023 – Expected Jun 2028</i>
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	<i>Sep 2023 – Jun 2025</i>
M.S. in Electrical and Computer Engineering (Machine Learning and Data Science), GPA: 3.73/4.0	
University of Tehran	<i>Sep 2018 – Jul 2023</i>
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*.
- 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.