

Raman Ebrahimi

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San Diego, CA - 92092, United States




SUMMARY

PhD student in Machine Learning and Data Science with a strong mathematical foundation and expertise in AI, machine learning, and quantitative analysis. Strong analytical and programming skills with experience in optimization, probabilistic modeling, and financial data analysis. Passionate about leveraging computational techniques, optimization, and statistical analysis to uncover insights and drive impactful solutions.

SKILLS

- **Programming Languages:** Python, SQL, JavaScript, Swift, C/C++
- **Data Science & Machine Learning:** PyTorch, Scikit-learn, KNIME, WEKA, SAS, Tableau
- **Other Tools & Technologies:** Gurobi, AnyLogic, NetLogo, \LaTeX
- **Research Skills:** Mathematical modeling, Game Theory, Optimization, Critical thinking, Problem-solving


EXPERIENCE

- **Multi-agent Intelligence and Decision Systems (MINDS) lab**  Sep 2022 - present
San Diego, USA
Graduate Researcher
 - Using game theoretical modeling, mathematical optimization, and Python to create ML/AI frameworks that account for cognitive biases.
 - Identifying necessary and sufficient conditions for existence, uniqueness, and stability of Nash equilibrium in multilayer network games, providing insights for policymaking using data analysis on real-world datasets.
 - Developed an interactive real-time strategy game using machine learning algorithms to study human-environment interactions, enhancing user engagement through real-world data.
- **American Institute for Behavioral Research and Technology**  Dec 2024 - Feb 2025
San Diego, USA
Data Analyst Intern
 - Revived and improved a graphing application for the “Generativity Theory” project, restoring its functionality after two years of inactivity using Python and SQL.
 - Integrated machine learning to enable user-agnostic behavior prediction, achieving over 90% accuracy in certain game modes using PyTorch and scikit-learn.
 - Enhanced the predictive model by refining its mathematical framework and optimizing data processing using mathematical optimization and operations research.
 - Developed tools for recording and visualizing behavioral data, facilitating analysis and validation across multiple subjects using pandas, matplotlib and plotly.
- **Scientific Association of Industrial Engineering**  Jan 2019 - Oct 2021
Tehran, Iran
Data Science Product Manager
 - Led a team of CS students and created an online real-time strategic game using Unity.
 - Responsible for risk management, and managing the game storyline and technical teams.
 - Calculation of in-game economics, market prediction and simulating to test the servers and loopholes in the game before the event.
 - Executed live data monitoring during competitions to detect anomalies and enforce policy changes.
 - Created an aggregated report that captured 1000+ data points, enhancing decision-making for future events.

EDUCATION

- **University of California, San Diego** Sep 2023 - Mar 2025
San Diego, USA
M.Sc. in Machine Learning and Data Science (ECE department)
 - Advised by [Parinaz Naghizadeh](#)
- **Sharif University of Technology** Sep 2017 - Aug 2022
Tehran, Iran
B.Sc. in Industrial Engineering
 - Grade: 3.8 / 4.0
- **Sharif University of Technology** Sep 2017 - Aug 2022
Tehran, Iran
B.Sc. in Physics
 - Grade: 3.9 / 4.0

PROJECTS

- **SendSense iOS app: Implementation of the performance prediction tool in an iOS application.**
Tools: Swift, eXplainable AI (XAI), Machine Learning, Data Analysis 
 - iOS app for athletes to use to log training sessions and utilize machine learning to optimize their performance.
 - Implemented explainable AI to suggest actionable recourse.
 - Created interactive charts using Swift, ensuring insightful visualizations.
- **Algorithmic Trading with Reinforcement Learning**
Tools: Python, TensorFlow, Gym, Backtrader
 - Designed and implemented a Deep Reinforcement Learning trading agent using Proximal Policy Optimization (PPO) to optimize trade execution and portfolio allocation.
 - Built a simulated trading environment using historical stock/crypto data and compared RL performance with momentum and mean-reversion strategies.
- **Order Book Analysis & Market Microstructure Modeling**
Tools: Python, Pandas, Scikit-learn, XGBoost
 - Collected and analyzed Level-2 market data from Binance API to model bid-ask spreads, order flow imbalances, and short-term price movements.
 - Developed a model using LSTMs and XGBoost to forecast asset price changes based on order book dynamics.

PUBLICATIONS

C=CONFERENCE, J=JOURNAL, S=IN SUBMISSION

- [S.1] Ebrahimi, Raman, Kristen Vaccaro, and Parinaz Naghizadeh. **The double-edged sword of behavioral responses in strategic classification: Theory and user studies.** Manuscript submitted for publication in *ACM Conference on Fairness, Accountability, and Transparency (FAccT 2025)*.
- [J.1] R. Ebrahimi and P. Naghizadeh, **United We Fall: On the Nash Equilibria of Multiplex and Multilayer Network Games.** In *IEEE Transactions on Control of Network Systems*.
- [C.3] Ebrahimi, Raman, Kristen Vaccaro, and Parinaz Naghizadeh. **The Double-Edged Sword of Behavioral Responses in Strategic Classification.** *NeurIPS 2024 Workshop on Behavioral Machine Learning*.
- [C.2] Ebrahimi, R., Naghizadeh, P. (2025). **Extended Horizons: Multi-hop Awareness in Network Games.** In: Sinha, A., Fu, J., Zhu, Q., Zhang, T. (eds) *Decision and Game Theory for Security. GameSec 2024*. Lecture Notes in Computer Science, vol 14908. Springer, Cham.
- [C.1] R. Ebrahimi and P. Naghizadeh, **United We Fall: On the Nash Equilibria of Multiplex Network Games.**, 2023 *59th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, Monticello, IL, USA, 2023, pp. 1-8.

ADDITIONAL INFORMATION

Languages: English (fluent), Farsi/Persian (fluent)

Interests: Network Economics, Game Theory, Computational Social Science, Artificial Intelligence

REFERENCES

1. **Parinaz Naghizadeh**
Assistant Professor, Electrical and Computer Engineering
UC San Diego
Email: parinaz@ucsd.edu
Relationship: Ph.D. advisor
2. **Kristen Vaccaro**
Assistant Professor, Computer Science and Engineering
UC San Diego
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Relationship: Collaborator
3. **Isabel Trevino**
Associate Professor, Economics
UC San Diego
Email: itrevino@ucsd.edu
Relationship: Instructor and mentor