FATEMEH NAEINIAN

New York University, Department of Electrical and Computer Engineering

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Education

New York University　　　　　　　　　　　　　　　　　　　　　　**Jan 2025 – present**
PhD in Electrical Engineering　　　　　　　　　　　　　　　　　　　*New York City, USA*
- GPA : 4/4

University of Tehran　　　　　　　　　　　　　　　　　　　　　　**Sep 2019 – Jun 2024**
B.Sc in Electrical Engineering　　　　　　　　　　　　　　　　　　　*Tehran, Iran*
- GPA : 18.53/20 (3.83/4)

University of Tehran　　　　　　　　　　　　　　　　　　　　　　**Sep 2021 – Jun 2024**
Minor in Computer Engineering　　　　　　　　　　　　　　　　　　　*Tehran, Iran*
- GPA : 16.76/20 (3.4/4)

Publications

- **F. Naeinian**, E. Balazadeh, M. Tale Masouleh, "Mapping Human Grasping to 3-Finger Grippers: A Deep Learning Perspective," *2024 32nd International Conference on Electrical Engineering (ICEE)*, pp. 1–7, 2024.

Research Interests

- End-to-end autonomous driving systems
- Cross-domain generalization and mapless navigation
- Self-supervised and representation learning
- Motion forecasting and trajectory prediction
- Multi-modal perception and sensor fusion
- World Models

Research Experience

Graduate Research Assistant, Learning Systems Laboratory　　　　　**New York University**
Advisor: Prof. Anna Choromanska　　　　　　　　　　　　　　　　　*Jan 2025 – present*
- Investigating strategies for improving the **generalization of autonomous driving systems** across diverse urban environments without the need for retraining.
- Applying **self-supervised representation learning** to enhance transferability of trajectory and control predictions across domains.
- Designing scalable **data processing and visualization pipelines**, including multi-view overlays, to compare predicted behaviors against ground truth.
- Conducting cross-domain evaluations to develop **robust, adaptable autonomous driving frameworks** suitable for real-world deployment.

B.Sc Thesis　　　　　　　　　　　　　　　　　　　　　　　　　**University of Tehran**
TaarLab: The Human and Robot Interaction Lab　　　　　　　　　　　*Jul. 2023 – Mar. 2024*
- Built a dataset of human hand features for mapping grasping behaviors to a **3-finger gripper**.
- Used **MediaPipe** to extract and label finger coordinates for high-quality model inputs.
- Trained and evaluated **Object Detection** models to identify optimal grasping points.

Internship　　　　　　　　　　　　　　　　　　　　　　　　　　**Remote**
Technical University of Munich　　　　　　　　　　　　　　　　　　*Summer 2022*
- Conducted Boundary Computation for determining the **Reachable Set** of **Robotic Manipulators**.

Leadership & Mentorship

- **Mentor, NYU Arise Program**, New York, NY　　　　　　　　　　　Summer 2025
Supervised a team of high school students on a machine learning project, guiding them through dataset preparation, model training, and result evaluation. Mentored students in scientific communication, leading to a successful poster presentation at the program's closing event.

Relevant Courses [1]

New York University

- Advanced Machine Learning †   4/4
- Digital Signal Processing †   4/4

University of Tehran

- Neural Networks †   20/20
- Machine Learning †   20/20
- Artificial Intelligence   18.1/20
- Data Structures and Algorithms   20/20
- Advanced programming 18.6/20
- Operational Research   19.9/20
- Digital Control Systems 19.6/20
- Fundamentals of Mechatronics Engineering   19/20
- Engineering Probability and Statistics   18.43/20

Honors and Awards

- Received the School of Engineering (SoE) PhD Fellowship at NYU for an academic year, 2025.
- Ranked within the Top 20% among more than 116 B.Sc. students of the Electrical Engineering Department at the University of Tehran, 2023.
- Awarded the Supporter Foundation of the University of Tehran Honorable Award for Academic Excellence, 2019-2021.
- Ranked 3rd in the Control branch of Electrical Engineering, 2023.
- Ranked among the top 0.1% (92nd) in the nationwide university entrance exam in Mathematics and Physics fields for a B.Sc. degree, 2019.
- Ranked among the top 0.1% (91th) in the nationwide university entrance exam in Foreign Languages fields for a B.Sc. degree, 2019.
- Gold Prize in Tebyan Student Projects Festival in computer seminars, 2017.

Skills

Programming Languages & Frameworks :
- Proficient in Python, MATLAB, C, C++, Verilog
- Familiar with TensorFlow, NumPy, Pandas, Pyomo, Matplotlib, Keras, scikit-learn, PyTorch, Seaborn, CSS, HTML, JavaScript

Softwares & Developer Tools :
- Familiar with Jupyter Notebook, Google Colab, ModelSim, Quartus II, MultiSim, STM32CubeIDE, LaTeX, Visual Studio Code, Arduino

Teaching Experience

Course Assistant at New York University:
- Digital Signal Processing †(Fall 2025)

Teaching Assistant at the University of Tehran:
- Neural Networks and Deep Learning †(Spring & Fall 2023)
- Engineering Mathematics (Fall 2022 & Spring & Fall 2023)
- Linear Control Systems (Fall 2023)
- Operational Research (Fall 2023)
- Probability and Statistics (Spring 2023)
- Linear Algebra (Fall 2022)
- Linear Control Systems (Fall 2022)
- Electronics I (Spring 2021)
- Electrical Machines (Fall 2021)
- Introduction to Electrical Engineering (Spring 2021)

Languages

- **English** [Advanced Proficiency]
  TOEFL IBT (Oct. 7, 2023) : 107/120 (**Reading**: 29, **Listening**: 29, **Speaking**: 24, **Writing**: 25)
- **Persian** [Native]

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[1]Graduate Courses are indicated by †