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

- Autonomous driving systems
- Domain adaptation in autonomous driving
- Training and optimization of deep neural networks
- Trajectory prediction and steering estimation
- Applied machine learning
- Multi-modal sensor fusion (LiDAR, camera, radar)

Research Experience

Graduate Research Assistant, Learning Systems Laboratory   **New York University**
Advisor: Prof. Anna Choromanska   *2025 – present*
- Conducting research on **generalization in autonomous driving models** using the nuScenes dataset, focusing on adapting models trained in one city to perform effectively in another without retraining from scratch.
- Exploring **Joint-Embedding Predictive Architecture (JEPA)** and self-supervised learning methods to improve cross-domain transferability of steering angle and trajectory prediction.
- Developing data processing and visualization pipelines for scene-level analysis, including **BEV and camera overlays** to compare predicted and ground truth trajectories.
- Evaluating model performance under varying city structures and driving rules, with the goal of enabling **robust, city-agnostic autonomous driving systems**.

B.Sc Thesis, TaarLab: The Human and Robot Interaction Lab   **University of Tehran**
Supervisor: Dr. Mehdi Tale-Masouleh   *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, Technical University of Munich   **Remote**
Supervisor : Dr.-Ing Abdalla Swikir   *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

Teaching Assistant at the University of Tehran:
- Neural Networks and Deep Learning †(Spring & Fall 2023)
- Linear Control Systems (Fall 2023)
- Probability and Statistics (Spring 2023)
- Linear Control Systems (Fall 2022)
- Electrical Machines (Fall 2021)

- Engineering Mathematics (Fall 2022 & Spring & Fall 2023)
- Operational Research (Fall 2023)
- Linear Algebra (Fall 2022)
- Electronics I (Spring 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 †