Hossein Goli

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Education

Sharif University of Technology Tehran, Iran
B.Sc. in Computer Engineering *Oct. 2020 – Jun. 2025*

Rank: 2/192 in the CE Department (Graduated with highest honors)
GPA: 19.71/20 ($\equiv 4.00/4$)

National Organization for Development of Exceptional Talents (NODET) *2014 – 2020*

High School Diploma, Physics and Mathematics
Diploma GPA: 19.75/20

Research Interests

Reinforcement Learning **Off-Policy Evaluation** **Offline RL**
Robotics **Flow & Diffusion Models** **Generalization & Robustness**

Publications

- **H. Goli**, M. Gimelfarb, N. S. de Lara, H. Nishimura, M. Itkina, and F. Shkurti, "STITCH-OPE: Trajectory Stitching with Guided Diffusion for Off-Policy Evaluation," ***NeurIPS 2025 (Spotlight)***. Project page
- **H. Goli**, and F. Farnia, "Certified Adversarial Robustness via Partition-based Randomized Smoothing," *arXiv preprint*.
- M. Ramezani, **H. Goli**, A. Izad, and H. R. Rabiee, "Detecting Viral Social Events through Censored Observation with Deep Survival Analysis," *arXiv preprint*.

Research Experience

Robot Vision Lab (RVL), University of Toronto
Research Assistant under the supervision of Prof. Florian Shkurti *Dec. 2023 - Present*

- **STITCH-OPE (NeurIPS 2025 Spotlight) – Project page**
  - Developed a generative model–based approach to off-policy evaluation in offline RL that replaces explicit dynamics modeling.
  - Our method learns a chunked world model that combines positive and negative guidance from policies to generate theoretically validated, unbiased samples.
  - Conducted extensive experiments in high-dimensional continuous-control environments (e.g., MuJoCo).
  - Working on follow-up projects, building on this line of research.

Department of Computer Science and Engineering, The Chinese University of Hong Kong (CUHK)
Research Intern under the supervision of Prof. Farzan Farnia *Jul. 2023 - Dec. 2024*

- **Pixel Partitioning Randomized Smoothing – Code (GitHub)**
  - Proposed a new method for the Certified Robustness Problem that leverages the spatial correlation of the image pixels using SuperPixel Algorithms from the Computer Vision literature such as SLIC SuperPixels.
  - Using our method, the visibility of the image is greatly improved, and the effective noise is reduced by a factor of the square root of the average superpixel size.
  - Our paper is currently under review at ICASSP.

Department of Computer Engineering, Sharif University of Technology
Research Assistant under the supervision of Prof. Hamid R. Rabiee *Aug. 2022 - Jul. 2023*

- **Detecting Viral Social Events through Censored Observation with Deep Survival Analysis**
  - Developed a framework for early detection of viral events in a complex network using statistical methods such as survival analysis. We used RNNs to capture time series information and learn a survival function that will be used in the downstream classification task.
  - Our work is currently under review at IEEE TCSS.

Honors and awards

- **Silver Medal of the National Physics Olympiad** *Summer 2019*
- **Ranked 2nd** among the 192 entrants of 2020 at Sharif University of Technology
- **Ranked 32nd** out of +150,000 undergraduate applicants in the National University Entrance Exam.
- **Cornell, Maryland, Max Planck** Pre-doctoral Research School *Summer 2024*
  - I was among about 80 talented students who got accepted and participated in **CMMRS 2024**, **(Certificate)**

Teaching Experiences and Community Involvement

• Teaching Assistant at Sharif University of Technology

- Machine Learning (Graduate), Spring 2024, Prof. Fatemeh SeyedSalehi —— Head Teaching Assistant
- Machine Learning (Graduate), Fall 2023, Prof. Abolfazl Motahari —— Theoretical Head Teaching Assistant
- Probability and Statistics, Spring 2023, Prof. Ali Sharifi Zarchi —— Head of Midterm Exam
- Linear Algebra, Fall 2022, Prof. Hamid R. Rabiee —— Recitation Class and Homework
- Advanced Programming, Spring 2022, Prof. Amin Fazli —— Project Design Team

• Physics and AI Olympiad Teacher *2020 - Present*

- Prepared students to participate in the International Physics and AI Olympiad. I taught multiple subjects such as Multivariate Calculus, Electromagnetics, Newtonian Mechanics and the more theoretical aspects of Machine Learning.

• Rasta Summer School - Game Theory Mentor *Summer 2022*

- We organized and led a workshop for high school students, aiming to introduce fundamental concepts of game theory in an engaging manner. The workshop was divided into three sections: Market Sharing, Braess's Paradox, and the Development of Trust. My primary responsibility was the Development of Trust Section.

• Scientific Staff of Sharif AI-Challenge *Summer 2022*

- As a scientific staff, I was involved with the design and implementation of the scientific part of the challenge.

Notable Course Projects

Computer Vision Course Project

- Developed a graph-based image segmentation algorithm using superpixels to group similar pixels by spatial and color features. After constructing the graph, Disjoint Set Union (DSU) iteratively merges vertices until final segmentation. Leveraging SLIC superpixels, a k-means variant, this method enhances robustness without requiring adversarial training. In the second part of the project, we implement Tiny-NeRF, a simplified version of the famous NeRF paper.
  Github repository Project Report

System Analysis Design Project - Kafka from scratch

- In this project, we designed a fully dockerized distributed message queue such as kafka from scratch. Github repository

Image Captioning Using LSTM

- An LSTM-based encoder-decoder model using Keras for image captioning on the Flickr8k dataset and utilized PyTorch's "bert-base-uncased model" to assess caption similarity. Github repository

EigenFace - Linear Algebra Final Project

- This project uses Principal Component Analysis (PCA) to reduce image dimensionality and represent faces as eigenfaces for efficient face recognition. Github repository

Selected Courses

Machine Learning : 20/20	Artificial Intelligence: 20/20	Linear Algebra: 20/20
Probability and Statistics: 20/20	3D Computer Vision: 20/20	Modern Information Retrieval: 20/20
Game Theory : 20/20	Convex Optimization: 20/20	Numerical Analysis: 20/20

Online Courses Audited from Other Universities

Stanford CS229: Machine Learning	Dr. Andrew Ng
Stanford CS230: Deep Learning	Dr. Andrew Ng
Stanford CS231n: Deep Learning for Computer Vision	Dr. Fei-Fei Li
Berkeley CS285: Deep Reinforcement Learning	Dr. Sergey Levine
MIT 18.06: Linear Algebra	Dr. Gilbert Strang

Technical Skills

- **Machine Learning Tools:** PyTorch, TensorFlow, Keras, Pandas, NumPy, Scikit-learn, OpenCV, Matplotlib
- **Programming Languages:** Python, Java, C, C++, R, Assembly (8086, MIPS)
- **Typesetting:** LaTeX, Markdown

Languages

Persian: Native

English: Advanced (C1)