

Leili Goli

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Research Interests

Machine Learning
Computer Vision

Deep Learning
Robotics

Artificial Intelligence
Data Science

Education

University of Toronto

Ph.D. (Direct Entry) in Computer Science

Toronto, Canada

Sept. 2021 – Expected Nov. 2026

- **Current GPA 4/4**

Sharif University of Technology

B.Sc. in Computer Engineering

Tehran, Iran

Sept. 2017 – Jun. 2021

- **GPA 19.35/20** (equivalent to major GPA of 4/4)

Research Experience

Ph.D. Graduate Research Assistant in University of Toronto

People, AI, Robots Research Group (PAIR), Department of Computer Science

Supervisor: Professor Animesh Garg, Professor Andrea Tagliasacchi

Sept. 2021 - Present

Toronto, Canada

- Implicit Neural Fields application in 3D vision

Student Researcher

Vector Institute, Department of Computer Science

Sept. 2021 - Present

Toronto, Canada

Summer Internship in Technical University of Munich (TUM)

Interdisziplinäres Forschungslabor (IFL), Computer Aided Medical Procedures (CAMP)

Supervisor: Professor Nassir Navab

Jun. 2020 - Mar. 2021

Munich, Germany

- My research is focused on segmentation of longitudinal chest CT scans of COVID-19 patients and prediction of clinical information.

Summer Research Program in University of British Columbia (UBC)

Robotics and Control Laboratory, Department of Electrical and Computer Engineering

Supervisor: Professor Purang Abolmaesumi

Jun. 2019 - Sept. 2019

Vancouver, Canada

- I devised experiments in deep learning applications in medical image analysis, with particular focus on ultrasound probe navigation using cardiac ultrasound images.

Research Assistant in Sharif University of Technology

Image Processing Laboratory (IPL), Department of Computer Engineering

Supervisor: Professor Shohreh Kasaei

Sept. 2019 - Mar. 2021

Tehran, Iran

- I investigated Adversarial Attacks and Defenses against Deep Neural Networks, specifically focusing on robustness against rotation and scale transformations.

Publications

L. Goli, D. Rebain, S. Sabour, A. Garg, A. Tagliasacchi, “nerf2nerf: Pairwise Registration of Neural Radiance Fields”, Submitted to IEEE International Conference on Robotics and Automation (ICRA) 2023.

L. Goli, ST. Kim, A. Khakzar, N. Navab, “Longitudinal Quantitative Assessment of COVID-19 Infection Progression from Chest CTs”, Accepted to Medical Image Computing and Computer Assisted Intervention (MICCAI) 2021.

H. Naderi, L. Goli, S. Kasaei, “Generating Unrestricted Adversarial Examples via Three Parameters”, Accepted to Multimedia Tools and Applications 2021.

H. Naderi, L. Goli, S. Kasaei, "Scale Equivariant CNNs with Scale Steerable Filters", Accepted to Machine Vision and Image Processing (MVIP) 2020.

Honors and Awards

Ranked 38th in the Iranian National Universities Entrance Exam for Bachelor of Science Aug. 2017
among more than 150,000 participants.

National Elite Foundation Fellowship 2017

Work and Teaching Experience

Intern at Arsh, Tehran, Iran Spring 2020

- Developing an age detection network using noisy labels in Pytorch framework.
- Visualizing and presenting hundreds of processed and classified mining reports in an understandable and effective manner.

Teaching Assistant at University of Toronto, Toronto, Canada Fall 2021 - Fall 2022

- Foundations of Computer Science course (CSC110)
- Data Science I (JSC270)
- Introduction to Image Understanding (CSC420)

Teaching Assistant at Sharif University of Technology, Tehran, Iran Fall 2019 - Spring 2021

- Artificial Intelligence - Linear Algebra - Engineering Probability and Statistics

Skills

Programming Languages: Python (Proficient), C (Proficient), Java (Proficient), R, MATLAB, HTML, CSS

Frameworks: PyTorch, Keras, Django, QT

Tools: Blender, CLion, PyCharm, IntelliJ, Proteus, Quartus

Operating Systems: Windows, Linux

Relevant Coursework

Introduction to Machine Learning (4/4), Physics-based Animation (4/4), Probabilistic Learning (4/4), Neural Radiance Field Reading Course (4/4), Imitation Learning, Image Processing (20/20), Artificial Intelligence (20/20), Modern Information Retrieval (18.2/20), Probability and Statistics for Computer Engineering (20/20), Linear Algebra (19.4/20), Numerical Computations (20/20), Design of Algorithms (20/20), Data Structures and Algorithms (20/20), Fundamentals of Programming: C (20/20), Advanced Programming: Java (20/20), General Math 1 (19/20), General Math 2 (19.5/20), Discrete Mathematics (18/20)

Notable Projects

nerf2nerf: Pairwise Registration of Neural Radiance Fields, a PyTorch implementation. [GitHub repository](#)

Longitudinal COVID CT Scan Assessment: A project on quantitative assessment of longitudinal COVID chest CT scans, using deep neural networks. [GitHub repository](#)

YumYum: A project for Mobile Programming course, An android app for collecting and finding new food recipes. [GitHub repository](#)

PezeShkat Website: A project for System Analysis and Design course, a website for medical appointment management and facilitating doctor-patient communication. [GitLab repository](#)

Clash of Clans: A project for Advanced Programming course, a simulation of Clash of Clans strategy game using network programming (including both UDP and TCP protocols) in Java and Javafx graphic library. [GitLab repository](#)

Pacman: A project for Programming course, a Pacman game using C language and SDL graphic library. [GitHub repository](#)