

# 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

Sept. 2021 - Present

Toronto, Canada

*Supervisor: Professor Alec Jacobson, Professor Andrea Tagliasacchi*

- Implicit Neural Fields applications 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)

Jun. 2020 - Mar. 2021

Munich, Germany

*Supervisor: Professor Nassir Navab*

- 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

Jun. 2019 - Sept. 2019

Vancouver, Canada

*Supervisor: Professor Purang Abolmaesumi*

- 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

Sept. 2019 - Mar. 2021

Tehran, Iran

*Supervisor: Professor Shohreh Kasaei*

- 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

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**Ranked 38<sup>th</sup> 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

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**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

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**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

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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

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**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](#)

**Pezechkat 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](#)