Leili Goli

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Research Interests

Machine Learning	Deep Learning	Artificial Intelligence
Computer Vision	Reinforcement Learning	Data Science

Education

University of Toronto — Toronto, Canada
Ph.D. (Direct Entry) in Computer Science — Sept. 2021 – Expected Nov. 2026

- **Current GPA 4/4**

Sharif University of Technology — Tehran, Iran
B.Sc. in Computer Engineering — 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 — Sept. 2021 - Present
People, AI, Robots Research Group (PAIR), Department of Computer Science — Toronto, Canada
Supervisor: Professor Animesh Garg, Professor Andrea Tagliasacchi

- Working on building realistic simulators using 3D vision and Reinforcement Learning.

Student Researcher — Sept. 2021 - Present
Vector Institute, Department of Computer Science — Toronto, Canada

Summer Internship in Technical University of Munich (TUM) — Jun. 2020 - Mar. 2021
Interdisziplinäres Forschungslabor (IFL), Computer Aided Medical Procedures (CAMP) — 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) — Jun. 2019 - Sept. 2019
Robotics and Control Laboratory, Department of Electrical and Computer Engineering — 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 — Sept. 2019 - Mar. 2021
Image Processing Laboratory (IPL), Department of Computer Engineering — 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

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

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.

Honors and Awards

Ranked 38^{th} 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 - Spring 2021

- Foundations of Computer Science course (CSC110)
- Foundations of Computer Science course
- 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: CLion, Pycharm, IntelliJ, Spyder, Proteus, Quartus

Operating Systems: Windows, Linux

Relevant Coursework

Introduction to Machine Learning, Physic-based Animation, 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), Machine Learning - coursera.org, Deep Learning - coursera.org, Convolutional Neural Networks - coursera.org

Notable Projects

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

Proxy and Server: A course project for Computer Networks course, a simulation of a proxy system and a server under IP protocol. GitLab repository