Lily Goli

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Research Interests

Computer Vision | Computer Graphics | Deep Learning

Education

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

- **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
Dynamic Graphics Project (DGP), Department of Computer Science — Toronto, Canada
Supervisor: Professor Alec Jacobson, Professor Andrea Tagliasacchi

- Robustness and Enhancement of Radiance Fields in 3D vision

Student Researcher — Dec. 2023 - Present
Google DeepMind, SynthX Group — Remote, Mountain View, US
Supervisor: Dmitry Lagun

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

- 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

- Medical image analysis, with 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

- Adversarial training of Deep Neural Networks, specifically focusing on robustness against rotation and scale transformations.

Publications

L. Goli*, S. Sabour*, M. Matthews, D. Lagun, L. Guibas, A. Jacobson, D. Fleet, A. Tagliasacchi "**SpotLessSplats: Ignoring Distractors in 3D Gaussian Splatting**", ArXiv 2024

L. Goli, C. Reading, S. Sellán, A. Jacobson, A. Tagliasacchi, "**Bayes' Rays: Uncertainty Quantification for Neural Radiance Fields**", Computer Vision and Pattern Recognition (CVPR) 2024, **Highlight ($\sim$ top 10%)**

A. Shabanov, S. Govindarajan, C. Reading, **L. Goli**, D. Rebain, K.M. Yi, A. Tagliasacchi, "**BANF: Band-limited Neural Fields for Levels of Detail Reconstruction**", Computer Vision and Pattern Recognition (CVPR) 2024

L. Goli, D. Rebain, S. Sabour, A. Garg, A. Tagliasacchi, "**nerf2nerf: Pairwise Registration of Neural Radiance Fields**", Accepted to IEEE International Conference on Robotics and Automation (ICRA) 2023, Computer Vision and Pattern Recognition (CVPR) Workshop XRNeRF 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.

Press Coverage

Cover of the Computer Vision News: nerf2nerf with Lily Goli

Story highlight in fxguide News: Stitching NeRFs: 'nerf2nerf':Pairwise Registration of Neural Radiance Fields.

Honors and Awards

Robert E. Lansdale/Okino Computer Graphics Graduate Fellowship $2000, 2024
Admitted and granted scholarship for International Computer Vision Summer School (ICVSS) 2024
Awarded admission to the Master's program at Sharif University based on academic merit 2021
Ranked 6th among 130 Computer Engineering entrants of 2017 at Sharif University of Technology 2021
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

Invited Talks

nerf2nerf, Google Geo group, Google 2023

Bayes' Rays, SynthX group, Google 2023

Bayes' Rays, Computer Vision Workshop, Vector Institute 2024

Work and Teaching Experience

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

Foundations of Computer Science course (CSC110), Data Science I (JSC270), Introduction to Image Understanding (CSC420), Introduction to Machine Learning (CSC311)

Teaching Assistant at Sharif University of Technology, Tehran, Iran Fall 2019 - Spring 2021 Artificial Intelligence, Linear Algebra, Engineering Probability and Statistics

Technical Skills

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

Frameworks and Tools: PyTorch, JAX, Keras, Blender, Django, QT

Academic Service

Reviewer at CVPR, NeurIPS, SIGGRAPH Asia, TPAMI, ICRA, IROS, RA-L.

Help organizing DGP high school outreach, DGP Academy (news) Feb. 2024

Organizing 3D Vision Reading Group at University of Toronto Oct. 2023 - Jan. 2024