

Lily Goli

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Research Interests

Computer Vision

Machine Learning

Robotics

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 19.16/20 (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

- Thesis: Uncertainty Estimation and Robustness in 3D Vision

Research Intern

Jan. 2025 - Aug. 2025

Waabi, Sensor Simulation Group

Toronto, Canada

Supervisor: Dr. Siva Manivasagam, Professor Raquel Urtasun

- Generative 3D shape completion for graphics simulation

Student Researcher

Dec. 2023 - Dec. 2024

Google DeepMind, SynthX Group

Remote, Mountain View, US

Supervisor: Dr. Dmitry Lagun, Professor David Fleet

- Robustness of 3D reconstruction and camera estimation for noisy scenes

Student Researcher

Sept. 2021 - Present

Vector Institute, Department of Computer Science

Toronto, Canada

- Affiliate PhD student in computer vision and graphics

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

- Medical image segmentation given long-horizon disease development

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

- Volumetric representations for ultrasound images

Publications

L. Goli*, S. Sabour*, M. Matthews, M. Brubaker, D. Lagun, A. Jacobson, D. Fleet, S. Saxena, A. Tagliasacchi “RoMo: Robust Motion Segmentation Improves Structure from Motion”, International Conference on Computer Vision (ICCV) 2025

M. Taktasheva, L. Goli, A. Fiorini, Z. Li, D. Rebain, A. Tagliasacchi “3D Gaussian Flats: Hybrid 2D/3D Photometric Scene Reconstruction”, Neural Information Processing Systems (NeurIPS) 2025

J. Wang, H. Che, Y. Chen, Z. Yang, L. Goli, S. Manivasagam, R. Urtasun “Flux4D: Flow-based Unsupervised 4D Reconstruction”, Neural Information Processing Systems (NeurIPS) 2025

A. Vora, L. Goli, A. Tagliasacchi, H. Zhang “HiT: Hierarchical Transformers for Unsupervised 3D Shape Abstraction”, *under review*, 2025

L. Goli*, S. Sabour*, M. Matthews, D. Lagun, L. Guibas, A. Jacobson, D. Fleet, A. Tagliasacchi “**SpotLessSplats: Ignoring Distractors in 3D Gaussian Splatting**”, Transactions on Graphics (TOG) 2025

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 (~ 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**”, 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 Misabeled Examples via Three Parameters**”, Multimedia Tools and Applications Journal 2021.

H. Naderi, **L. Goli**, S. Kasaei, “**Scale Equivariant CNNs with Scale Steerable Filters**”, 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

Ontario Graduate Scholarship (OGS)	\$15000, 2025-2026
Robert E. Lansdale/Okino Computer Graphics Graduate Fellowship	\$2000, 2025
Voted Top 10 Fast-Forward Presentation, SIGGRAPH	2025
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 38th in the National Universities Entrance Exam for Bachelor of Science among more than 150,000 participants.	Aug. 2017
National Elite Foundation Fellowship	2017

Invited Talks

• nerf2nerf — Google Geo, Mountain View, USA <i>Host: Veselin Dikov</i>	2023
• Bayes’ Rays — Google, Mountain View, USA <i>Host: Mark Matthews</i>	2024
International Conference on 3D Vision (3DV), Singapore <i>Highlight Papers Section</i>	2025
Kyoto Vision Workshop, Kyoto, Japan <i>Host: Prof. Ko Nishino</i>	2025
• SpotLessSplats — 3D Gaussian Splatting Meetup (Online) <i>Host: Mike Caronna</i>	2024
Google Reading Group, Mountain View, USA <i>Host: Prof. Leonidas Guibas</i>	2024
• Uncertainty & Robustness in 3D Reconstruction — ETH Zurich, Switzerland <i>Hosts: Xu Haofei, Prof. Marc Pollefeys</i>	2024
Google Zurich, Switzerland <i>Hosts: Dr. Michael Oechsle, Dr. Federico Tombari</i>	2024

University of California, Berkeley, USA <i>Host: Prof. Angjoo Kanazawa</i>	2025
École des Ponts ParisTech, Paris, France <i>Host: Prof. Vincent Lepetit</i>	2025
York University, Toronto, Canada <i>Host: Prof. Kosta Derpanis</i>	2025

Mentoring and Student Supervision

• Ahan Shabanov (PhD. student, Simon Fraser University) Topic: Level of Detail representation in Neural Fields	Fall 2023
• Maria Taktasheva (PhD. student, Simon Fraser University) Topic: Planar surface representation in 3D models	Winter 2024 – Present
• Aditya Vora (PhD. student, Simon Fraser University) Topic: Hierarchical Shape Abstraction given 3D geometry	Summer 2025
• Weihan Luo (Undergraduate student, University of Toronto) Topic: 4D reconstruction of plant growth	Spring 2025 - Present
• Lulu Wei (MSc. student, University of Toronto) Topic: Robust 4D reconstruction	Fall 2025 - Present

Teaching Experience

Teaching Assistant at University of Toronto , Toronto, Canada Foundations of Computer Science, Data Science I, Intro to Image Understanding, Intro to Computer Graphics, Introduction to Machine Learning	Fall 2021 - Present
Teaching Assistant at Sharif University of Technology , Tehran, Iran Linear Algebra, Probability and Statistics, Artificial Intelligence	Fall 2019 - Spring 2021

Technical Skills

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

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

Academic Service

Reviewer at CVPR, ECCV, ICCV, NeurIPS, ICLR, SIGGRAPH, SIGGRAPH Asia, TOG, TPAMI, ICRA, IROS, RA-L, AAAI.	
Organizing Generative Scene Completion workshop (SceneComp) at ICCV	Oct. 2025
Volunteer Tutor at Her Code Camp	Sept. 2025
Organizing team for DGP high school outreach, DGP Academy (news)	Feb. 2024
Organizing 3D Vision Reading Group at University of Toronto	Oct. 2023 - Jan. 2024