Fereshteh Forghani

forghani@yorku.ca fereshtehforghani.github.io

Education

York University Toronto, ON
M.Sc. in Computer Science (Thesis-based) 09/2022 - present
- **GPA: 4.0/4.0**, Advisor: **Prof. Marcus Brubaker**

Sharif University of Technology
B.S. in Computer Engineering 09/2017 - 09/2022
- **GPA: 18.53/20**

Publications

Can Generative Models Improve Self-Supervised Representation Learning? **In submission**
Sana Ayromlou, Arash Afkanpour, Fereshteh Forghani, Vahid Reza Khazaie*.* *(AAAI 2025)*

PolyOculus: Simultaneous Multi-view Image-based Novel View Synthesis
Jason Yu, Fereshteh Forghani, T Aumentado-Armstrong, Konstantinos Derpanis, Marcus Brubaker. **ECCV 2024**

Long-Term Photometric Consistent Novel View Synthesis with Diffusion Models
Jason Yu, Fereshteh Forghani, Konstantinos Derpanis, Marcus Brubaker. (webpage) **ICCV 2023**

Research Experience

York University Toronto, CA
Research Assistant, Supervisor: ***Marcus Brubaker*** 09/2022-Present
- Thesis Project: Scale Ambiguity in Generative Novel View Synthesis (GNVS)
- Introduced Scale Ambiguity as a challenge in single view GNVS with various experiments
- Proposed to optimize scales per training scene in a **Multi-View Diffusion Model** used for Novel View Synthesis
- Introduced a new metric to based on **Optical Flow** to measure the effectiveness of optimizing scale with denoising loss

Vector Institute Toronto, CA
Machine Learning Intern, Supervisors: ***Arash Afkanpour*** 01/2024 - 05/2024
- Project: Generative Self-Supervised Learning
- Adding semantically consistent generative image augmentations with Instance-Conditioned GAN and Stable Diffusion UnClip to various self-supervised methods
- Enhanced the generalization and robustness of self-supervised representations in all cases

Ecole Polytechnique Federale de Lausanne (EPFL) Lausanne, Switzerland
Research Intern, Supervisor: ***Alexandre Alahi*** 07/2021 – 02/2022
- Visual Intelligence for Transportation(VITA) Lab
- Project: Realistic Adversarial Attack on Human Trajectory Predictors
- Used Masked autoregressive flow to find natural adversarial examples to test the reliability of human trajectory predictors.
- Adversarially trained LSTM based predictors and reduced the **collision rate** up to **35%** in the case of an adversarial attack on test data.

Sharif University of Technology
Research Assistant, ***Mohammad Hossein Rohban*** 10/2020 – 02/2022
- Project: Self-Supervised Approaches for Cell Segmentation
- Used unsupervised learning frameworks (simCLR, MoCo, SimSiam) to train U-net encoder with unannotated cell images and improved mean average precision (mAP) after fine-tuning with annotated ones **up to 8%**

Sinaweb
Machine Learning Intern 07/2020 – 09/2022

- Project: Intrinsic Plagiarism detection
- Proposed a regression model to fuse lexical, structural, and syntax features and predict writing style. Implemented an outlier detection model to find possible plagiarised segments.

Honors and Awards

Flight PS752 Commemorative Scholarship, Global Affairs Canada 2024
Vector Scholarship in AI, Vector Institute 2022
VISTA Program Master's Scholarship, York University 2022-2024
York Graduate Scholarship, York University 2022
Top 10% Academic Ranking, Sharif University of Technology 2020
Ranked 135th *in Iranian Nationwide University Entrance Exam (Among +300,000)*, 2017

Teaching Experience

York University
Computer Vision, Machine Learning and Pattern Recognition 2023-2024

Sharif University of Technology
Machine Learning (graduate course), Artificial Intelligence, Advanced Programming 2018-2021

Skills

Programming: Python, Java, C/C++, R, SQL, Bash
Machine Learning Tools: PyTorch, PyTorch Lightning, OpenCV, scikit-learn, NumPy, pandas, matplotlib
Deep Learning: Multi-GPU Training, Distributed Training, Model Optimization
Tools: SLURM, Conda, Github's CI/CD
Languages: Persian (native), English (advanced, TOEFL score:109)

Relevant Coursework

York University

- *Neural Network and Deep Learning(A+), Computer Vision (A+), Machine Learning Theory (A+), Data Mining (A+)*

Sharif University of Technology

- *Machine Learning (graduate), Artificial Intelligence, Signals and Systems, Advanced Information Retrieval, Linear Algebra, Probability and Statistics, Design of Algorithms, Data Structures*

Online Courses

- *CS231n: Convolutional Neural Networks for Visual Recognition by Stanford, Deep Learning Specialization by deeplearning.ai, CS294: Deep Unsupervised Learning by UCBerkeley.*

Deep Learning and Reinforcement Learning Summer School (DLRLSS)

- *Montreal Institute for Learning Algorithms (MILA), QB, Canada.* ***[certificate]***

Academic Services

Reviewer of CVPR 2024 03/2024
Reviewing 2 full papers for Generative Models for Computer Vision workshop

Member of Executive Team in the Data Days 02/2019
Sharif University of Technology

Member of Executive Team in the ACM International Collegiate Programming Contest 12/2018
Sharif University of Technology

Member of Executive Team in Sharif Artificial Intelligence Challenge 03/2018
Sharif University of Technology