

FERESHTEH FORGHANI

CONTACT  forghani@yorku.ca  Personal Website
INFORMATION  <https://www.linkedin.com/in/fereshtehforghani>  +1-(647)-686-5359

RESEARCH INTERESTS Generative Models, Computer Vision, Deep Learning, Machine Learning

EDUCATION **York University**
M.Sc. in Computer Science 2022-Present
Supervisor : Dr. Marcus Brubaker
GPA : **A+**
Coursework :

- *University Courses* : Neural Network and Deep Learning, Computer Vision (A+), Machine Learning Theory (A+), Data Mining (A+)
- *Online Courses* : Deep Unsupervised Learning (UC Berkeley CS294, online, audited), CNNs for Visual Recognition (Stanford CS231n, online, audited)

Sharif University of Technology

B.S. in Computer Engineering 2017-2022
GPA : **18.53/20**
Thesis : Improve cell segmentation using self-supervised frameworks (SimCLR, MoCo, SimSiam)

PUBLICATIONS Jason J. Yu, **Fereshteh Forghani**, Konstantinos G. Derpanis, Marcus A. Brubaker. *Long-Term Photometric Consistent Novel View Synthesis with Diffusion Models*, Under review at ICCV 2023, March 2023.

RESEARCH EXPERIENCE **Research Assistant at York University**
Advised by Dr. M. Brubaker, Sep 2022-Present
Novel View Synthesis with Set Representation using Diffusion Models

- Working on using scene set representation with diffusion models to improve Novel View Synthesis
- Conduct a literature review on Diffusion Models and their applications as a directed reading course

Internship at Ecole Polytechnique Federale de Lausanne (EPFL)

Advised by Prof. A. Alahi, Visual Intelligence for Transportation (VITA) Lab Jul 2021-Feb 2022
Realistic Adversarial Attack on Human Trajectory Predictor

- Conducted a literature review on density estimation techniques and their applications on human trajectory data.
- 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.

Research Assistant at Sharif University of Technology

Advised by Prof. Mohammad Hossein Rohban, Medical Image Analysis Group, Department of Computer Engineering Oct 2020-Feb 2022

Cell Segmentation using a Self-supervised Framework

- Used unsupervised learning frameworks (simCLR, MoCo, SimSiam) to train U-net encoder with unannotated cell images.
- Improved mean average precision (mAP) after fine-tuning with annotated ones **up to 8%**.

WORK EXPERIENCE **Machine Learning Intern at Sinaweb Company** Summer 2020
Intrinsic Plagiarism detection

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

TECHNICAL SKILLS	Languages and Tools: <ul style="list-style-type: none"> • Programming: Python, Java, C/C++ • Vision/ML Libraries: PyTorch, TensorFlow, Numpy, Scikit-Learn, OpenCV • Data Manipulation: Pandas, SQL
HONORS AND AWARDS	<p>Vector Scholarship in AI and Member of Vector Institute 2022 17,500 CAD, Awarded to exceptional candidates pursuing an AI-focused master's program.</p> <p>VISTA Program Master's Scholarship 2022-2024 10,000 CAD per year, Awarded to high-calibre scholars doing research in computer vision.</p> <p>York Graduate Scholarship 2022 6,000 CAD, Awarded to top-ranked applicants based on academic merit.</p> <p>National University Entrance Exams (Konkur) Ranked 125th among 150,000 in Mathematics and Physics 2017</p> <p>National Elite Foundation Fellowship 2017-2021</p>
UNIVERSITY PROJECTS	<ul style="list-style-type: none"> • Computer Vision Course Homework : (Python) (Github Link) <i>Fall 2022</i> Image Filtering : Canny Edge Detection, Seam Carving RANSAC-based Image Stitching Optical Flow Estimation • Cleaned data and trained models to find best clickthrough rate, Machine Learning Course Project (Python) <i>Fall 2020</i> (Github Link) • Preprocessed, classified and clustered English Ted Talks and Persian Wikipedia pages to design an information retrieval system with search and query correction abilities, Modern Information Retrieval Course Project (Python) <i>Fall 2020</i> (Github Link) • Appointment making website, System Analysis and Design Course Project (Django framework) (Gitlab Link) <i>Spring 2020</i>
SOCIAL SKILLS	Teamwork, Fast Learner, Problem Solving, Creativity
TEACHING EXPERIENCE	<p>Teaching Assistant</p> <ul style="list-style-type: none"> • Building Interactive Systems, Dr. Kyan <i>Winter 2023</i> • Machine Learning (graduate course) Dr. Hosseini <i>Spring 2021 & Fall 2021</i> • Artificial Intelligence, Dr. Rohban <i>Spring 2021</i>
VOLUNTEER EXPERIENCE	Member of Data Days Scientific Group (DataDays - A Machine Learning and Data Science Competition) Sharif University of Technology <i>Nov 2019 - Mar 2020</i>
LANGUAGES	<p>English (Fluent)</p> <ul style="list-style-type: none"> • TOEFL : 109/120 Reading : 30/30, Listening : 30/30, Speaking : 26/30, Writing : 23/30 <p>Persian (Mother tongue)</p>