FERESHTEH FORGHANI

CONTACT
INFORMATION

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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. (arXiv, webpage)

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 Dr. 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   *Oct 2020-Feb 2022*
Advised by Prof. Mohammad Hossein Rohban, Medical Image Analysis Group, Department of Computer Engineering
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:** • Programming: Python, Java, C/C++ • Vision/ML Libraries: PyTorch, TensorFlow, Numpy, Scikit-Learn, OpenCV • Data Manipulation: Pandas, SQL

HONORS AND AWARDS

Vector Scholarship in AI and Member of Vector Institute *2022*
17,500 CAD, Awarded to exceptional candidates pursuing an AI-focused master's program.
VISTA Program Master's Scholarship *2022-2024*
10,000 CAD per year, Awarded to high-calibre scholars doing research in computer vision.
York Graduate Scholarship *2022*
6,000 CAD, Awarded to top-ranked applicants based on academic merit.
National University Entrance Exams (Konkur)
Ranked 125th among 150,000 in Mathematics and Physics *2017*
National Elite Foundation Fellowship *2017-2021*

UNIVERSITY PROJECTS

• Computer Vision Course Homework : (Python) (Github Link) *Fall 2022*
    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) *Fall 2020*
(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) *Fall 2020*
(Github Link)
• Appointment making website, System Analysis and Design Course Project (Django framework) (Gitlab Link) *Spring 2020*

SOCIAL SKILLS

Teamwork, Fast Learner, Problem Solving, Creativity

TEACHING EXPERIENCE

Teaching Assistant
• Building Interactive Systems, Dr. Kyan *Winter 2023*
• Machine Learning (graduate course) Dr. Hosseini *Spring 2021 & Fall 2021*
• Artificial Intelligence, Dr. Rohban *Spring 2021*

VOLUNTEER EXPERIENCE

Member of Data Days Scientific Group (DataDays - A Machine Learning and Data Science Competition) Sharif University of Technology *Nov 2019 - Mar 2020*

LANGUAGES

English (Fluent)
    • **TOEFL : 109/120** Reading : 30/30, Listening : 30/30, Speaking : 26/30, Writing : 23/30
Persian (Mother tongue)