



FERESHTEH FORGHANI

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RESEARCH INTERESTS	Machine Learning, Deep Learning, Computer Vision
EDUCATION	York University M.Sc. in Computer Science 2022-Present Supervisor : Dr. Marcus Brubaker <i>Thesis</i> : Exploring Diffusion Models and their applications. <i>Coursework</i> : <ul style="list-style-type: none">• <i>University Courses</i> : Computer Vision, Machine Learning Theory, Data Mining• <i>Online Courses</i> : Deep Unsupervised Learning (UC Berkeley CS294, online, audited) Sharif University of Technology B.S. in Computer Engineering 2017-2022 GPA : 18.53/20 <i>Coursework</i> : <ul style="list-style-type: none">• <i>University Courses</i> : Machine Learning (20/20), Artificial Intelligence (19.9/20), Probability and Statistics (18.6/20), Linear algebra (19.5/20)• <i>Online Courses</i> : CNNs for Visual Recognition (Stanford CS231n, online, audited)
PRESENTATION	Mahmoudinia E, Forghani F , Rohban MH. Medical image segmentation with limited annotated data using a self-supervised and generalized framework. Presented at EMBL Symposium ; October 2021. (Poster Link)
RESEARCH EXPERIENCE	Research Assistant at York University Sep 2022-Present Advised by Prof. M. Brubaker, <i>Diffusion Models and their Applications</i> <ul style="list-style-type: none">• Currently reading papers on equivalent implementations of Diffusion Models and their applications. Internship at Ecole Polytechnique Federale de Lausanne (EPFL) Jul 2021-Feb 2022 Advised by Prof. A. Alahi, Visual Intelligence for Transportation (VITA) Lab <i>Realistic Adversarial Attack on Human Trajectory Predictor</i> <ul style="list-style-type: none">• 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 <i>Cell Segmentation using a Self-supervised Framework</i> <ul style="list-style-type: none">• 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 <i>Intrinsic Plagiarism detection</i> <ul style="list-style-type: none">• 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++• Data Manipulation: Pandas, SQL• Vision/ML Libraries: PyTorch, TensorFlow, Numpy, Scikit-Learn, NLTK, OpenCV

Web and Mobile app Development: Django, HTML, CSS, JS, Android, Swift
Operating Systems: Windows, Macintosh

HONORS AND AWARDS	Recipient of the Vector Scholarship in AI and Member of Vector Institute 2022 17,500 CAD, Awarded to exceptional candidates pursuing an AI-focused master's program recognized by the Vector Institute.
	Recipient of the VISTA Program Master's Scholarship 2022-2024 10,000 CAD per year, Awarded to high-calibre scholars doing research in computer vision.
	Recipient of York Graduate Scholarship 2022 6,000 CAD, Awarded to top-ranked applicants in the first year of study based on their academic merit.
	Ranked 125 th among 150,000 in Mathematics and Physics in National University Entrance Exams (Konkur) 2017
	Recipient of the Undergraduate Studies Grant from the Iranian National Foundation of Elites. 2017-2021
UNIVERSITY PROJECTS	<ul style="list-style-type: none"> Cleaned data and trained models to find best clickthrough rate, Machine Learning Course Project (Python) <i>Fall 2020</i> Preprocessed, classified and clustered English Ted Talks and Persian Wikipedia pages in order to design an information retrieval system with search and query correction abilities, Modern Information Retrieval Course Project (Python) <i>Fall 2020</i> Project Github Link Appointment making website, System Analysis and Design Course Project (Django framework) <i>Spring 2020</i> Project Gitlab Link
SOCIAL SKILLS	Teamwork, Fast Learner, Problem Solving, Creativity
TEACHING EXPERIENCE	Teaching Assistant (Sharif University of Technology) <ul style="list-style-type: none"> Machine Learning (graduate course), Dr. A. Hosseini <i>Spring 2021 & Fall 2021</i> Artificial Intelligence, Dr. MH. Rohban <i>Spring 2021</i> Computer Architecture, Dr. H. Asadi <i>Spring 2021</i> Computer Structure and Language, Dr. L. Arshadi <i>Fall 2020</i> Digital Design, Dr. Sh. Hesabi <i>Spring 2020</i> Computer Structure and Language, Dr. H. Asadi <i>Fall 2019</i> Advance Programming, Dr. B. Hatami <i>Spring 2019</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> Contestant of Webelopers (A web competition) Sharif University of Technology <i>Oct 2019</i> Data Days Executive Staff, Sharif University of Technology <i>Feb 2019</i> ACM Executive Staff, ACM-International Collegiate Programming Contest <i>Dec 2018</i> Sharif AI Executive Staff, Sharif Artificial Intelligence Challenge <i>2018 & 2019</i>
LANGUAGES	English (Fluent) <ul style="list-style-type: none"> TOEFL : 109/120 Reading : 30/30, Listening : 30/30, Speaking : 26/30, Writing : 23/30 GRE : Quantitative Reasoning : 165/170