Tooba IMTIAZ

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EDUCATION

FALL 2021 - PRESENT	**PhD Candidate,** ELECTRICAL ENGINEERING, *Northeastern University*, Boston	**Advisor:** Prof. Jennifer Dy
2018 - 2020	**Masters,** ELECTRICAL ENGINEERING, (**GPA:** 3.87/4.3) *Korea Advanced Institute of Science and Technology (KAIST)*, S. Korea	**Advisor:** Prof. In-So Kweon
2014 - 2018	**Bachelors,** ELECTRICAL ENGINEERING, (**GPA:** 3.93/4.0, **Rank:** 5th/156) *National University of Sciences and Technology (NUST)*, Pakistan	**Advisor:** Prof. Faisal Shafait

WORK EXPERIENCE

JUNE – NOV 2025

Student Researcher | GOOGLE, PIXEL BIOMETRICS AI RESEARCH (BAIR)
Seattle, WA
- Developed a text-conditioned multi-view latent diffusion model for stylized 3D scene generation.

SEP 2024 – MAY 2025

Student Researcher | GOOGLE BEAM (PROJECT STARLINE)
Cambridge, MA
- Continued research as an extension of my internship project for Google Beam.
- Proposed a feed-forward, generalizable 3DGS-based novel view synthesis framework capable of reconstructing wide-coverage, high-resolution scenes, achieving state-of-the-art performance in a single inference pass. ("LVT", SIGGRAPH Asia 2025)

MAY 2024 – AUG 2024

Research Intern | GOOGLE BEAM (PROJECT STARLINE)
Playa Vista, CA
- Worked on novel-view synthesis for Google Beam.
- Proposed feed-forward architecture achieved plausible quantitative and qualitative results, despite its simplicity.

SEP 2021 – PRESENT

Research Assistant | MACHINE LEARNING LAB @ SPIRAL,
Northeastern University, Boston
- Developing a novel view synthesis framework to visualize previously unseen depths in 3D reflectance confocal microscopy (RCM) images of human skin, enabling early detection of skin diseases and cancers.
- Contributed to a regularization-based approach for improving continual learning. ("STAR", ICLR 2025)
- Developed an optimization-based sparse adversarial attack on images and evaluated its interpretability. ("SAIF", TMLR 2025)
- Implemented NeRF-based 3D scene reconstruction from phone camera videos to facilitate at-home patient health monitoring.
- Formulated a clustering-based loss to improve the performance of 3D-object detection from multiview 2D inputs.

SPRING 2023

Teaching Assistant | EECE7397 Advanced Machine Learning, Northeastern University

SEP 2020 - AUG 2021

Consultant - ML and AI | ENDRESS+HAUSER,
Maulburg, Germany
Proposed ML and CV-based solutions for process automation and optimization. Led two projects, both deployed to production:
- **Deep learning for unsupervised 3D classification:** used Autoencoders, Capsule architectures, and Implicit Neural Networks.
- **Forecasting on time series:** utilized DNNs and Temporal Transformers to predict compound concentrations in liquids using sensors measuring base physical quantities. Achieved $\sim 96\%$ accuracy w.r.t. specialized physical sensors.

SEP 2018 - AUG 2020

Research Assistant | ROBOTICS AND COMPUTER VISION LAB,
KAIST, South Korea
- **Bosch-RCV Project:** Performed camera calibration, data collection, and vehicle trajectory estimation. Designed an occlusion-robust vehicle re-identification method using GANs for seamless tracking across a multi-camera surrounding awareness system.
- **Universal Adversarial Perturbations:** Developed novel adversarial attack algorithms. Published at CVPR, AAAI, and ACCV '20.

SEP 2015 - MAY 2018

Research Intern | TUKL-NUST R&D CENTRE,
NUST, Pakistan
- Proposed table detection and parsing in document images using ML and CV (LSTMs, text classification, clustering algorithms).
- Implemented LSTMs for handwritten address recognition to sort postal mail.

PUBLICATIONS

LVT: Large-Scale Scene Reconstruction via Local View Transformers | **SIGGRAPH Asia 2025**
T. Imtiaz*, L. Chai*, K. Heal, X. Luo, J. Park, J. Dy, J. Flynn

STAR: Stability-Inducing Weight Perturbation for Continual Learning | **ICLR 2025**
M. Eskander, **T. Imtiaz**, D. Hill, Z. Wang, J. Dy

ADAPT to Robustify Prompt Tuning Vision Transformers | **TMLR 2025**
M. Eskander, **T. Imtiaz**, Z. Wang, J. Dy

SAIF: Sparse Adversarial and Imperceptible Attack Framework | **TMLR 2025**
T. Imtiaz, M. Kohler, J. Miller, Z. Wang, M. Eskandar, M. Sznaier, O. Camps, J. Dy

[Volumetric Propagation Network: Stereo-LiDAR Fusion for Long-Range Depth Estimation](#) | **IEEE RA-L 2021**
J. Choe, K. Joo, **T. Imtiaz**, I.S. Kweon

[Understanding Adversarial Examples from the Mutual Influence of Images and Perturbations](#) | **CVPR 2020**
C. Zhang*, P. Benz*, **T. Imtiaz**, I.S. Kweon

[CD-UAP: Class Discriminative Universal Adversarial Perturbation](#) | **AAAI 2020**
C. Zhang*, P. Benz*, **T. Imtiaz**, I.S. Kweon

[Double Targeted Universal Adversarial Perturbations](#) | **ACCV 2020**
P. Benz*, C. Zhang*, **T. Imtiaz**, I.S. Kweon

[Data from Model: Extracting Data from Non-robust and Robust Models](#) | **CVPRW 2020**
P. Benz*, C. Zhang*, **T. Imtiaz**, I.S. Kweon

[Universal Adversarial Perturbations are Not Bugs, They are Features](#) | **CVPRW 2020**
P. Benz*, C. Zhang*, **T. Imtiaz**, I.S. Kweon

Patents

LVT: Large-Scale Scene Reconstruction via Local View Transformers | **Pending**
J. Flynn, L. Chai, **T. Imtiaz**
A generalizable novel view synthesis framework for reconstructing wide-coverage, high-resolution scenes, achieving state-of-the-art performance.

Scholarships and Awards

2020	Qualcomm Innovation Fellowship Award, South Korea (among the 20 awardees)
2014-2018	NUST Merit Scholarship (Awarded to top-3 GPA holders of cohort)
2017	Global UGRAD Exchange Program, US Dept of State ($\sim$ 7.6% selection rate)

Skills

Python	JAX, PyTorch, Tensorflow, Keras, Numpy, scikit-learn, cuda, Matplotlib
C / C++ / Java	Object-oriented programming, Data structures, frontend and backend dev
Misc.	MATLAB, Unix, gcc, Git, SQL, LaTeX, ROS, AutoCAD

Academic Service

Workflow Chair	[AAAI 2024](#)
	- Managed the AAAI 2024 paper review process for 12,100 submissions, working with 7k reviewers, 765 senior program committee (SPC), and 320 area chairs (AC).
	- Used topic modeling and text similarity to determine reviewer, SPC, and AC assignments.
Conference Reviewer	[ICLR 2026](#), [AAAI 2026](#), [NeurIPS 2025](#), [ICLR 2025](#), [ECCV 2024](#), [CVPR 2024](#), [ACCV 2024](#), [ICCV 2023](#)
Volunteer	ICML 2022