

# Tooba IMTIAZ

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## EDUCATION

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

## WORK EXPERIENCE

SEP 2024 - PRESENT	<b>Student Researcher</b>   <a href="#">GOOGLE</a> <i>Cambridge, MA</i> <ul style="list-style-type: none"><li>Continuing research as an extension of my internship project for Project Starline.</li><li>Focusing on advancing the state-of-the-art for novel view synthesis to contribute to the broader 3D vision research community.</li></ul>
MAY 2024 - AUG 2024	<b>Research Intern</b>   <a href="#">GOOGLE</a> <i>Playa Vista, CA</i> <ul style="list-style-type: none"><li>Worked on novel-view synthesis for <a href="#">Project Starline</a>.</li><li>Proposed feed-forward architecture achieved plausible quantitative and qualitative results, despite its simplicity.</li></ul>
SEP 2021 - PRESENT	<b>Research Assistant</b>   <a href="#">MACHINE LEARNING LAB @ SPIRAL</a> , <i>Northeastern University, Boston</i> <ul style="list-style-type: none"><li>Contributed to a regularization-based approach for improving continual learning ("STAR", ICLR 2025)</li><li>Developed an optimization-based sparse adversarial attack on images and evaluated its interpretability. ("SAIF", Pre-print)</li><li>Implemented Nerf-based 3D scene reconstruction from phone camera videos to facilitate at-home patient health monitoring.</li><li>Formulated a clustering-based loss to improve the performance of 3D-object detection from multiview 2D inputs.</li></ul>
SPRING 2023	<b>Teaching Assistant</b>   EECE7397 Advanced Machine Learning, Northeastern University
SEP 2020 - AUG 2021	<b>External Consultant for ML and AI</b>   <a href="#">ENDRESS+HAUSER</a> , <i>Maulburg, Germany</i> <p>Proposed ML and CV-based solutions for process automation and optimization. Led two projects, both deployed to production:</p> <ul style="list-style-type: none"><li><b>Deep learning for unsupervised 3D classification</b>: used Autoencoders, Capsule architectures, and Implicit Neural Networks.</li><li><b>Forecasting on time series</b>: utilized DNNs and Temporal Transformers to predict compound concentrations in liquids using sensors measuring base physical quantities. Achieved ~ 96% accuracy w.r.t. specialized physical sensors.</li></ul>
SEP 2018 - AUG 2020	<b>Research Assistant</b>   <a href="#">ROBOTICS AND COMPUTER VISION LAB</a> , <i>KAIST, South Korea</i> <ul style="list-style-type: none"><li><b>Bosch-RCV Project</b>: 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.</li><li><b>Universal Adversarial Perturbations</b>: Developed novel adversarial attack algorithms. Published at CVPR, AAAI, and ACCV '20.</li></ul>
SEP 2015 - MAY 2018	<b>Research Intern</b>   <a href="#">TUKL-NUST R&amp;D CENTRE</a> , <i>NUST, Pakistan</i> <ul style="list-style-type: none"><li>Proposed table detection and parsing in document images using ML and CV (LSTMs, text classification, clustering algorithms).</li><li>Implemented LSTMs for handwritten address recognition to sort postal mail.</li></ul>

## PUBLICATIONS

[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](#) | [Under review](#)

T. Imtiaz, M. Kohler, J. Miller, Z. Wang, M. Sznajder, 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

## SCHOLARSHIPS AND AWARDS

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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 (~ 7.6% selection rate)

## SKILLS AND SERVICE

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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	Reviewer for <a href="#">ICLR 2025</a> , <a href="#">ECCV 2024</a> , <a href="#">CVPR 2024</a> , <a href="#">ICCV 2023</a> , NeurIPS 2023 ( <a href="#">New in ML Workshop</a> ) Workflow chair at <a href="#">AAAI 2024</a> , Volunteer at ICML 2022.