Ahmad Mahmood

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Education

ETH Zurich **Sep. 2023 – Present**
Masters in Computer Science *Zurich, Switzerland*

Lahore University Of Management Sciences (LUMS) **Sep. 2019 – May 2023**
Bachelor of Science in Computer Science *Lahore, Pakistan*

cGPA: 3.8/4.0

Coursework

- Data Structures
- Discrete Mathematics
- Deep Learning
- Sequence Models
- General Topology
- Linear Algebra
- Multi variable Calculus
- Machine Learning
- Artificial Intelligence
- Probability
- Convolutional Neural Networks
- Theory of Automata

Coursera

- Deep Learning Specialization (https://coursera.org/share/41ddc1247d0aff628fcc5883cb40b623)

Research Publications

- **Ahmad Mahmood***, Muzammal Naseer*, Salman Khan, Fahad Khan, **Boosting Adversarial Transferability using Dynamic Cues** (*Accepted to the International Conference on Learning Representations (**ICLR '23**)*)

Experience

Mohamed bin Zayed University of Artificial Intelligence **March 2022 – August 2022**
Research Assistant - Internship *Abu Dhabi, UAE*

- Worked as a research assistant for the computer vision department.
- Research on utilizing temporal information through frozen image models to improve adversarial transferability from Image-to-Video models.
- Advisors: Dr. Salman Khan, Dr. Muzammal Naseer

Lahore University of Management Sciences **June 2022 – June 2023**
Student Researcher *Lahore, Pakistan*

- Worked on exploring how the insights of the Central Limit Theorem could be used to achieve robust performance in Federated Learning tasks over non-IID data.
- Supervised by Dr Ihsan Ayyub Qazi, Dr Agha Ali Raza and Dr Zafar Ayyub Qazi

Teaching Assistant *Lahore, Pakistan*

- Assisting Dr Agha Ali Raza in the graduate level course, CS 535: Machine Learning

Directed Research Project **September 2021-December 2021**
Project Member

- Collected and Processed data for the development of a Text to Speech Machine Learning software project.
- Currently working on a Speech Correction System specifically targeting the problem of detecting and correcting Tajweed mistakes in Quranic recitation.

LUMS Student Mathematics Society **September 2019 –**
Vice President Events *Lahore, Pakistan*

- Organised panel talks on various topics including, but not limited to, prioritizing mental health in online semesters, women in science, and a few topics related to math and physics.
- Organised the Salam Sessions - a seminar series aimed to honour the memory of Dr. Abdus Salam and discuss the importance of various topics in science and mathematics.

Projects

Boosting Adversarial Transferability using Dynamic Cues | *Python, Pytorch, Numpy* | *Research Project* **June 2022**

- Focused on boosting the transferability of video adversarial examples by optimizing temporal prompts through frozen image models.
- Adapted imagenet models such as vit-base, Dino etc. to videos.
- Outcome: Paper submitted for review to *ICLR' 23.*

Trigger word detection using RNN | *Python, Numpy, Tensorflow Keras,Jupyter* **September 2021**

- Implemented a bidirectional recurrent neural network using keras to detect trigger words in an audio file as part of the Sequence Models course on Coursera.
- Code not available on github due to coursera's honour code.
- Course certification available on Linkedin profile.

Applied Convolutional Neural Networks as part of a Coursera course | *Python, Jupyter* **August 2021**

- Built a model to detect cars in an image using YOLO(You Only Look Once) algorithm.
- Implemented Neural Style Transfer using Deep Convolutional Networks to generate artwork given style and content images.
- Codes not available on github due to coursera's honour code.
- Course certifications available on Linkedin profile.

Cat Image Classifier | *Python, Numpy, Jupyter* **June 2021**

- Built and Trained a deep L-layer Neural Network and used it to classify cat images.

Tic-Tac-Toe AI | *Python* **May 2021**

- Implemented the Min-Max algorithm to build an AI that plays the classic tic-tac-toe game against a person.
- Code available on github.

Honors and Awards/Extracurricular

Top 6 Mathematicians in Pakistan, International Mathematics Olympiad

- Represented Pakistan in the **International Mathematics Olympiad (IMO)** 2019 held in Bath, UK.
- Shortlisted from a pool of around 2000+ participants through series of camps.

Dean's Honour List

- The honor has been awarded to me in my first, second, and third year at LUMS, based on a cGPA of 3.85/4, 3.93/4, and 3.89/4 respectively.

Invited Reviewer

- ACML 2022

Competitive Programming

- **1st** place (Pakistan) in multiple Google Kickstart rounds.
- **2nd** place (LUMS) in one of Pakistan's largest programming contests conducted by IEEE LUMS Society, Codin' Guru 3.0

Sports

- Member of the School Football Team throughout A'Levels.
- Former member of the LUMS Football Team.
- Received gold and silver medals in various Table Tennis competitions.

Technical Skills

Programming: Python, C/C++, HTML, CSS, Javascript, Haskell, LaTeX
Frameworks: NodeJS, ReactJS, ExpressJS, Flask
Cloud Computing: Amazon Web Services(AWS), DigitalOcean
Version Control: Git, Github
Software: Jupyter, Google Colab, VS Code, Sublime Text
Databases: MySQL, PostgreSQL, MongoDB