Usman Anwar

usmananwar391@gmail.com
https://uzman-anwar.github.io/
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Education

Information Technology University, Lahore. September 2019 – May 2021
MS Data Science

University of Engineering and Technology, Lahore August 2015 – May 2019
BS Electrical Engineering

Government College University, Lahore August 2013 – May 2015
Associate's Degree Pre-Engineering

Work Experience

Research Assistant & Graduate Student Fellow July 2019 – Present
Center of Artificial Intelligence and Computational Science,
Information Technology University, Lahore.
Research Advisor: Dr. Ali Ahmed.

Senior Machine Learing Engineer February 2020 – Present
Scientific Computing Department,
NetSol Technologies, Lahore.

Research Intern July – September 2018
Internet of Things Laboratory,
Khwarizmi Institute of Computer Science, Lahore.
Research Advisor: Dr. Ubaid Ullah Fayyaz.

Junior Data Scientist June – August 2017
ADDO AI, Lahore.

Publications

U. Anwar, S. Malik, A. Ahmed, and A. Aghasi. Learning to solve differential equations across initial conditions. In *ICLR 2020 Workshop on Integration of Deep Neural Models and Differential Equations*, 2020. URL arxiv.org/abs/2003.12159

U. Anwar, S. Malik, A. Aghasi, and A. Ahmed. Inverse constrained reinforcement learning. *Under review as a conference paper at ICLR 2021*

Projects

Learning Constraints In Context Of Reinforcement Learning April 2020 – Present
Research Project • Advisor: Dr. Ali Ahmed

The project explores the idea of using demonstrations from experts to solve the problem of reward misalignment in reinforcement learning.

Solving Partial Differential Equations Across Initial Conditions August 2019 – January 2020
Research Project • Advisor: Dr. Ali Ahmed

Showed that using adversarial training, Physics Informed Neural Networks (Raissi et al. 2018) can be enabled to generalize across initial conditions. The work has applications in aerodynamics, computational fluid modelling and various other engineering and scientific fields.

Accoustic Source Separation Using Deep Learning September 2018 – May 2019
Undergraduate Senior Project • Advisor: Dr. Ubaid Ullah Fayyaz • Website: https://acoustic-source-separation.github.io/

Implemented Deep Clustering Algorithm (Hershrey et al. 2015) in tensorflow and demonstrated its efficacy for the purposes of single channel speech separation from two speaker mixture. We also showed that due to use of neural networks, we achieve excellent generalization on out of language samples as well. In another contribution, we showed that this technique could also be used to separate noise from mixtures and used for purposes of speech enhacement.

Paper Discovery System Via Topic Modelling December 2019
Course Project (Information Systems)

Demonstrated that using Embedded Topic Model (Dieng et al. 2018), unlabelled papers from proceedings of could be categorized into semantically meaningful topics (e.g. reinforcement learning, neurscience *etc.*)and users, prominently young researchers, could be recommended articles based on their browsing history and/or any mentioned interests.

Imitation Learning On Atari Games June 2020
Course Project (Deep Learning) • Website: https://uzman-anwar.github.io/projects/2020/06/28/DL-Project/

Used Generative Adversarial Imitation Learning (Ho et al. 2016) to train a Reinforcement Learning agent from demonstrations of expert behaviour on two Atari games; *Pong* and *Breakout.*

Skills

- Python (Numpy, Scipy, Matplotlib) • Pytorch • Tenorflow • C • SQL • NoSQL

Leadership Activities

Managing Director & Co-Founder Spectra Magazine   April 2017 – May 2020

Spectra Magazine is a student-powered online magazine aiming to enhance public understanding of science and shape the narrative of science journalism in Pakistan. Read more about us at *www.spectramagazine.org/about.*