

USMAN ANWAR

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EDUCATION

Information Technology University, Lahore. MS Data Science (Expected Graduation: June 2021)	September 2019 – Present
University of Engineering and Technology, Lahore BS Electrical Engineering	August 2015 – May 2019
Government College University, Lahore Associate's Degree Pre-Engineering	August 2013 – May 2015

WORK EXPERIENCE

Senior Machine Learning Engineer Scientific Computing Department, NetSol Technologies, Lahore.	February 2020 – Present
Research Assistant & Graduate Student Fellow Center of Artificial Intelligence and Computational Science, Information Technology University, Lahore. Research Advisor: Dr. Ali Ahmed.	July 2019 – June 2020
Research Intern Internet of Things Laboratory, Khwarizmi Institute of Computer Science, Lahore. Research Advisor: Dr. Ubaid Ullah Fayyaz.	July – September 2018
Junior Data Scientist ADDO AI, Lahore.	June – August 2017

PUBLICATIONS

- U. Anwar, S. Malik, A. Aghasi, and A. Ahmed. Inverse constrained reinforcement learning. In *Proceedings of the 38th International Conference on Machine Learning*, 2021. URL <https://arxiv.org/abs/2011.09999>
- S. Malik, U. Anwar, 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

PROJECTS

Learning Constraints In Context Of Reinforcement Learning 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.	April 2020 – December 2020
Solving Partial Differential Equations Across Initial Conditions 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.	August 2019 – January 2020
Acoustic Source Separation Using Deep Learning Undergraduate Senior Project • Advisor: Dr. Ubaid Ullah Fayyaz • Website: https://acoustic-source-separation.github.io/ Implemented Deep Clustering Algorithm (Hershey 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 enhancement.	September 2018 – May 2019
Paper Discovery System Via Topic Modelling 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, neuroscience etc.) and users, prominently young researchers, could be recommended articles based on their browsing history and/or any mentioned interests.	December 2019
Imitation Learning On Atari Games 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; <i>Pong</i> and <i>Breakout</i> .	June 2020

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.