Aizaz Sharif

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EDUCATION

Ph.D. Computer Science Simula Research Laboratory, Norway | February 2020 - To Date
M.Sc. Computer Science FAST NUCES, Pakistan - GPA: 3.61/4.00 | August 2017 - July 2019
B.Sc. Computer Science FAST NUCES, Pakistan - GPA: 3.84/4.00 | August 2012 - July 2016

EXPERIENCE

Simula Research Laboratory, Norway *Ph.D. Researcher*   February 2020 - To Date
- Thesis title: Testing the Safety and Robustness of Autonomous Cars in a Multi-agent Environment
- Joined as a Ph.D. Researcher in the 'Department of Validation Intelligence for Autonomous Software Systems'.
- Involved in research areas related to deep reinforcement learning, adversarial machine learning, and testing autonomous driving models.
- Proposed novel scientific contributions in the fields of adversarial reinforcement learning, systematic benchmarking, and reward modeling with respect to testing decentralized mulit-agent autonomous driving systems.
- Created an open-source platform for testing multi-agent autonomous driving systems.
- Gained experience in simulated driving environments such as Carla, Nocturne, and highway-env.
- Learned and implemented data science methodologies and machine learning engineering practices beyond the actual scope of Ph.D. research projects.

National Center for Cyber Security (NCCS), Pakistan *Research Associate*   February 2019 - January 2020
- Lead a small team of software developers for the 'Mobile Phone Digital Forensics' toolkit.
- Learned Mobile Forensic concepts in 2 months and highlighted the challenges faced during the criminal investigations.
- Implemented a Python based Flask backend for REST API calls of the user interface and SQLite for Android device databases.
- Constructed a web application for the acquisition, analysis, and reporting of Android devices for criminal investigation.
- Maintained a software workflow that was released to the authorities for beta testing.

FAST NUCES, Pakistan *Research Assistant*   September 2017 - February 2019
- Worked under 'Colab' Research group for the campus.
- Involved in research areas related to Generative Models, Natural Language Processing, Android malware detection, graph theory, and medical imaging.
- Implemented, co-wrote, and published a journal paper 'Android malware detection through generative adversarial networks'.

DCUBE Technologies, Pakistan *Software Engineer*   April 2017 - June 2017
- Worked under the 'Product Innovation and Strategy' team.
- Integrated state-of-the-art OCR libraries in 1 month to an ongoing C++ based large scale library for live deployment.
- Increased the accuracy of the OCR prediction by 10% along with performance optimization.

Techlogix, Pakistan *Software Engineer*   October 2016 - April 2017
- Worked as a Software Engineer for the implementation and support of FLEXCUBE which is Oracle's Universal Banking Solution.
- Implemented a workflow using PL/SQL for a smooth migration process from old to the proposed Oracle Solution under strict deadlines.
- Provided continuous support to the migrated system for running daily ongoing transactions with ease.

Nextbridge (Pvt) Ltd., Pakistan *Software Engineer Intern*   July 2016 - October 2016
- Worked as Intern under the program 'Web Development Training'.
- Captured basics on PHP and Javascript frameworks including Laravel, Angular, NodeJs and MongoDB for a complete MVC based Web application.

PROJECTS

ReMAV: Reward Modeling of Autonomous Vehicles for Finding Likely Failure Events   August 2023
   GitHub: https://github.com/T3AS/ReMAV
   Paper in submission: IEEE Transactions on Software Engineering (TSE)
   Tools/Libraries: Python, OpenAI Gym, Ray RLlib, Tensorflow, Carla
   Targeted domains: Inverse Reinforcement Learning, Behavior Modeling, Testing Autonomous Vehicles

Evaluating the Robustness of Deep Reinforcement Learning for Autonomous Policies in a Multi-agent Urban Driving Environment   November 2022
   GitHub: https://github.com/T3AS/Benchmarking-QRS-2022
   Paper Published: 22nd IEEE International Conference on Software Quality, Reliability, and Security (QRS)
   Tools/Libraries: Python, OpenAI Gym, Ray RLlib, Tensorflow, Carla, WanDB
   Targeted domains: Deep Reinforcement Learning, Systematic Benchmarking, Testing Autonomous Vehicles

Adversarial Deep Reinforcement Learning for Improving the Robustness of Multi-agent Autonomous Driving Policies   August 2022
   GitHub: https://github.com/T3AS/MAD-ARL
   Paper Published: 29th Asia-Pacific Software Engineering Conference (APSEC)
   Tools/Libraries: Python, OpenAI Gym, Ray RLlib, Keras, Tensorflow, Carla, ML Flow
   Targeted domains: Deep Reinforcement Learning, Adversarial Testing, Autonomous Vehicles

DeepOrder: Deep Learning for Test Case Prioritization in Continuous Integration Testing   September 2021
    GitHub: `https://github.com/T3AS/DeepOrder-ICSME21`
    Paper Published: 37th International Conference on Software Maintenance and Evolution (ICSME)
    Tools/Libraries: Python, Keras, Tensorflow, DVC
    Targeted domains: Regression testing, Test case prioritization, Deep Learning, Continuous Integration

Handwriting Generation using Recurrent Neural Networks   December 2018
    GitHub: `https://github.com/AizazSharif/Handwriting-Generation-Using-Recurrent-Neural-Networks`
    Tools/Libraries: Python, PyTorch
    Targeted domains: Supervised/Unsupervised Learning, Recurrent Neural Networks, Attention Models, Mixture Density Networks

Brain-Tumor-Segmentation-and-Localization-using-Deep-Learning   December 2018
    GitHub: `https://github.com/AizazSharif/Brain-Tumor-Segmentation-and-Localization-using-Deep-Learning`
    Tools/Libraries: Python, Tensorflow, Docker
    Targeted domains: Supervised Learning, Tumor segmentation, U-Net

KEY ACHIEVEMENTS & AWARDS

CANDAR Outstanding Paper CANDAR Conference, Japan   November 2019
1x Bronze Medal FAST NUCES, Pakistan   October 2019
7x Gold Medals and 1x Silver Medal FAST NUCES, Pakistan   August 2012 - May 2016