SHAHZAIB SAQIB WARRAICH

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EDUCATION

University of Southern California, Viterbi School of Engineering **Los Angeles, CA**

M.S., Applied Data Science - **CGPA: 4.00/4.00** Jan 2024 - Present

Relevant Coursework: Machine Learning, Deep Learning, Applied Natural Language Processing, Database Management

EXPERIENCE

Graduate Research Assistant **Los Angeles, CA**

Data, Interpretability, Language and Learning (DILL) lab March 2024 - Present

*A*dvisor: Dr. Swabha Swayamdipta (Gabilan Assistant Professor)

- Inferring practical consequences of **LLM data and model design choices**.
- Developing benchmarks for **LLM Evaluation**.

Research Engineer II (ML/CV) **Redmond, WA**

Retrocausal Dec 2022 - Dec 2023

- Engineered **precision assembly** solutions with up to **98%** detection accuracy for industry leaders such as Schneider Electric, Carrier, and Honda using cutting-edge object detection and activity recognition algorithms.
- Led the development of an **automated object detection** model training pipeline, which employed the cut, paste, and mix augmentation technique to generate synthetic dataset alongside labeled data, thereby reducing manual data labeling time by almost **5 times**.

AI Engineer **San Jose, CA**

Adlytic AI June 2021 - Dec 2022

- Spearheaded extensive R&D on **model optimization** and pruning techniques, optimizing models through knowledge distillation and leveraging **NVIDIA TensorRT** to significantly reduce model **inference latency** at the edge by approximately **3 times**.
- Achieved high model **throughput** and performance in production, within **1.5%** of the original performance.
- Executed the development and deployment of a **cloud-hosted** recommender system pipeline, achieving a remarkable model accuracy benchmark of up to **97%**. Boosted the product's sale conversion rate by nearly **200%**.

PROJECTS

Person Re-identification System, Product of Adlytic April 2022 - Dec 2022

- Leveraged facial recognition, super resolution, object detection, and multi-object tracking algorithms to design the model inference API. Utilized RTSP to perform object tracking on frames from live streams.
- Optimized object detection models to achieve a detection and recognition accuracy of up to **93%** with an IoU of nearly **0.77**.

Mobile App Recommender System, Product of ConsoliAds June 2021 - Mar 2022

- Designed end-to-end system architecture on AWS (SageMaker, EMR, EC2, S3, SNS).
- Optimized **matrix factorization** models (ALS) to generate user and content based recommendations using Apache Spark.
- Stored and served recommendations using AWS managed Redis databases.
- Packaged and deployed application using Docker containers.

PUBLICATIONS

- Residual balanced attention network for real-time traffic Scene Semantic Segmentation, 2023, IJECE: Kherraki, SS Warraich, M Maqbool, R El Ouazzani

LEADERSHIP

NUST Model United Nations Society

Director (Committees) Nov 2020 - Apr 2021

- Led a **40-member** team spanning liaison, operations, and logistics departments; effectively coordinated communication and efforts using Atlassian Jira, significantly increasing operational efficiency.

SKILLS & INTERESTS

Skills: Languages (Python, C/C++, SQL), Deep Learning Frameworks (PyTorch, Keras), Machine Learning Frameworks (Scikit-Learn, OpenCV), Data Analysis Frameworks (Pandas, Dask, PySpark), Data Visualization (Matplotlib, Seaborn, Plotly), Cloud (AWS), Others (Docker, Git, MongoDB, ROS)

Interests: AI Ethics and Governance, Hackathons, User Experience (UX) Design