

# Shujah Ur Rehman

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## EDUCATION

**Lahore University of Management Sciences (LUMS), Pakistan**  
*M.S Electrical Engineering (Graduated with Distinction)*

Aug. 2021 – Jan. 2024

**Lahore University of Management Sciences (LUMS), Pakistan**  
*B.S Electrical Engineering*

Aug. 2015 – July 2019

## EXPERIENCE

**Research Specialist – RISC Lab, KAUST, Saudi Arabia**

Sep. 2025 - Present

- *Perception for Agriculture and Underwater Robotic Applications :*

- Built an **end-to-end CV pipeline** for autonomous date-palm harvesting, deployed on Jetson AGX Orin.
- Curated and annotated 7,000+ real-world images using CLIP-based filtering and instance segmentation.
- Trained and optimized **YOLOv8-Seg** for challenging outdoor agricultural conditions.
- Achieved **30 FPS** embedded inference via model scaling and INT8/FP16 quantization.
- Integrated perception with **ROS2 robotics pipelines** and contributed to technical documentation.

**Research Associate – Algorithms in Theory and Practice Lab, LUMS**

Sep. 2022 – Aug. 2025

- *Semi-Supervised Learning for Medical Imaging data :*

- Implemented a complete pipe-line from pre-processing to training deep learning models for semi-supervised medical image segmentation for both 2D and 3D Cardiac MRI datasets in PyTorch.
- Proposed a computationally efficient U-Net based approach with two decoders for 3D Cardiac MRI scans leading to state-of-the-art performance.
- Explored self-supervised and fine-tuning approaches to enhance the generalizability of deep learning models for multi-center medical datasets.

**Research Assistant – Computer Vision & Graphics Lab, LUMS**

July. 2022 - Oct. 2022

- *Crop Classification for LBDC Region :*

- Collaborated with a team, including a PhD student, to assess and improve the classification accuracy of a Random Forest Classifier for Rabi and Kharif seasons in the LBDC region, Punjab, Pakistan, using Google Earth Engine.
- Developed visualizations for key indices (NDVI, EVI, NDWI) to track seasonal variations and enhance model performance.
- Conducted qualitative and quantitative analysis on the impact of NDVI thresholds, masking, and monthly intervals on classification accuracy.
- Compiled findings into detailed reports and presented progress during weekly review meetings.

**Research Officer – HPCNL, UET Lahore**

Mar. 2021 - Aug. 2021

- *Cross-lingual Transfer Learning for Urdu text :*

- Built and analyzed datasets, including Urdu-English word dictionaries and bilingual corpora for NLP tasks like propaganda detection, topic classification, and sentiment analysis.
- Implemented end-to-end pipelines for Urdu text processing and transfer learning in Python, covering dataset pre-processing to model deployment.
- Performed a benchmarking of popular transfer learning methods for text classification tasks for Urdu text classification tasks.

- *Pre-training BERT for Urdu Corpus :* Implemented a complete pipeline from pre-processing of the Urdu text data to implementation of the Transformers based BERT model for Urdu text.

**Research Assistant – Advanced Communications Lab, LUMS**

Oct 2019 - Aug 2020

- *Indoor Localization using Wi-Fi Received Signal Strength* - Implemented outlier removal using K-Means clustering and confidence intervals to reduce the localization error.

## TEACHING EXPERIENCE

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### CS 437 Deep Learning

Sep 2023 – Dec 2023

- Held weekly office hours, invigilated quizzes and exams, held tutorials, graded assignments

### CS 653 Digital Image Processing

Jan 2023 – May 2023

- Held weekly office hours, invigilated quizzes, graded assignments and quizzes.

### CS 437 Deep Learning

Sep 2022 – Dec 2022

- Developed the assignments and recorded the tutorials

### CS 455 Principles of Digital Audio & Video

Jan 2020 – May 2020

- Held weekly office hours, invigilated quizzes, held assignment tutorials, graded assignments and quizzes.

## PUBLICATIONS

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### Investigating Cross-lingual Transfer Learning for Urdu Text Using Word *International Conference on Open-Source Systems and Technologies (ICOSSST) 2021*

Published Dec, 2021

### Semi-Supervised Segmentation of Left Atrium on 3D Cardiac MRI Scans using Ambiguity-weighted Uncertainty Learning *Multimedia Tools and Applications*

In Submission

### Do state-of-the-art semi-supervised segmentation methods yield robust clinical measures? *Journal of the American College of Cardiology*

In Writing

## PROGRAMMING SKILLS

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- **Languages:** Python, MATLAB, C++
- **Machine Learning Skills:** PyTorch, Sci-kit learn, OpenCV, Numpy, Pandas, Matplotlib, Seaborn
- **Tools and other Skills:** Docker, Bash Scripting, LATEX, Google Earth Engine