

Muhammad Ahmed Mohsin

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EDUCATION

Stanford University

Ph.D. in Electrical Engineering

Bay Area, California

Sep. 2024 – present

- **Advisor:** [Dr. John Cioffi](#) – Research collaboration with Intel Corporation, Samsung, and Ericsson.
- Knight Hennessey scholar finalist.

RESEARCH EXPERIENCE

Intel Corporation, Ph.D. Researcher

September 2024 – Present

Advisor: John M. Cioffi

Project: Gaussian Splatting for Radial Field Reconstruction.

- Gaussian 3D splatting for wireless field reconstruction for channel estimation, eradicating feedback overhead.
- Work lead to publications in AAAI, ICASSP, Globecom, ICC

Samsung Semiconductors, Ph.D. Researcher

June 2024 – Present

Advisor: John M. Cioffi

Project: Deep Reinforcement Learning for Wireless Metaverse

- Working on DRL for energy optimization in Wi-Fi Networks for AR/VR applications
- Work lead to publications in AAAI, ICASSP, Globecom, ICC

Information Processing and Transmission Lab, SEECS, NUST

June 2023 – September 2024

Advisor: Dr. Syed Ali Hassan

Project: Reinforcement Learning in Applied Wireless Networks – Senior year design thesis

- Performed Statistical analysis for wireless networks and published in IEEE Communication Letters 2023.
- Worked on DRL for UAV optimization for RIS Networks, and work was published in Globecom 2024.
- Worked on spectrum optimization using Hierarchical RL and submitted work in Wireless Communications Magazine.

SELECTED PUBLICATIONS

Neural Gaussian Radio Fields for Channel Estimation

Neurips'25 (submitted)

M.A Mohsin, M. Umer, A. Bilal, J.M. Cioffi

Continual Learning for Wireless Channel Prediction

ICML'25 (submitted)

M.A Mohsin, M. Umer, A. Bilal, J.M. Cioffi

ItDPDM: Information-Theoretic Discrete Poisson Diffusion Model

ICML'24

S. Bhattacharya, A. Gorle, [MA.Mohsin](#), A. Bilal, C. Ding, J.M. Cioffi

Task Aware Distributed Source Coding for Correlated Audio Signals Using Perceptual Loss

AAAI'24

[MA.Mohsin](#), A. Bilal, S. Bhattacharya, J.M. Cioffi

Hierarchical Deep Reinforcement Learning for Spectrum Resource Optimization in Integrated Terrestrial and Non-Terrestrial Networks

AAAI'24

[MA.Mohsin](#), H. Rizwan, M.Umer, JM. Cioffi

PyramidTabNet: Transformer-Based Table Recognition in Image-Based Documents

ICDAR'23

M.Umer, [MA.Mohsin](#), A Ul-Hasan, and F.Shafait

Transformer-based Distributed Machine Learning for Downlink Channel Estimation in RIS-Aided Networks

ICASSP'24

[MA.Mohsin](#), S.M Jameel, H. Rizwan, I. Marjan, J.Y. Pan

Successive Interference Cancellation-aided Diffusion Models for Joint Channel Estimation and Data Detection in Low Rank Channel Scenarios

ICASSP'24

S.Bhattacharya, [MA.Mohsin](#), K.Rajabalifardi, JM.Cioffi

Optimum Power-Subcarrier Allocation and Time-Sharing in Multicarrier NOMA Uplink

ICASSP'24

S.Bhattacharya, K.Rajabalifardi, [MA.Mohsin](#), JM.Cioffi

Optimum Power Allocation for Low Rank Wi-Fi Channels: A Comparison with Deep Reinforcement Learning Framework

ICC'24

[MA.Mohsin](#), S.Bhattacharya, R.Pote K.Rajabalifardi, JM.Cioffi*

RAG with Multi-Modal LLM Framework for Wireless Environments

ICC'24

[MA.Mohsin](#), A.Bilal, S.Bhattacharya, JM.Cioffi*

- On Energy-Efficient Passive Beamforming Design of RIS-Assisted CoMP-NOMA Networks** ICC'24
*M. Umer**, *MA.Mohsin**, *A. Mehmood*, *H. Jung*, *H. Pervaiz*, *M. Gidlund*, *SA. Hassan*
- Vision Transformers based Semantic Communications for Wireless Networks** ICC'24
*MA.Mohsin**, *M.Farhan*, *M.Saad*, *M.Jazib*, *M.Zeeshan*, *MA.Jamshed*
- Power-Subcarrier Allocation and Time-Sharing in Multicarrier NOMA Uplink** Globecom'24
S.Bhattacharya, *K.Rajabalifardi*, *MA.Mohsin*, *JM.Cioffi*
- Deep Reinforcement Learning Trajectory and Beamforming Optimization of Aerial RIS in CoMP-NOMA Networks** Globecom'24
*M.Umer**, *MA.Mohsin**, *SA.Hassan*, and *H.Jung*
- STAR-RIS Assisted Downlink CoMP-NOMA Networks under Nakagami-m Fading** Comm Letters'23
*M.Umer**, *MA.Mohsin**, *SA.Hassan*, *H.Jung*, and *M.Gidlund*
- An Information-Theoretic Efficient Capacity Region for Multi-User Interference Channel** ISIT'24
S. Bhattacharya, *AR. Gorle*, *MA.Mohsin**, *JM. Cioffi*
- AI Enabled 6G for Semantic Metaverse: Prospects, Challenges and Solutions for Future Wireless Virtual Reality** Wireless Communication Magazine'24
*MA.Mohsin**, *S. Bhattacharya*, *AR. Gorle*, *MA. Jamshed*, *JM. Cioffi*
- Intelligent Spectrum Sharing in Integrated TN-NTNs: A Hierarchical Deep Reinforcement Learning Approach** Vehicular Technology Magazine'24
*M. Umer**, *MA.Mohsin**, *AA.Nasir*, *SA. Hassan*
- RIS-Assisted Aerial Non-Terrestrial Networks: An Intelligent Synergy with Deep Reinforcement Learning** Wireless Communication Magazine'24
*M. Umer**, *MA.Mohsin**, *A. Kaushik*, *QUA. Nadeem*, *AA.Nasir*, *SA. Hassan*

HONORS AND ACHIEVEMENTS

Ph.D. Fellowship: Awarded Stanford Graduate Fellowship.

Knight Hennessey: Knight Hennessey Fellowship finalist

Rector's Gold Medal: Awarded for outstanding thesis cohort 2024 .

President's medal: Awarded for third position pre-engineering group nationwide.

Scholarship Pointers: HSSC Federal Board scholarship recipient worth PKR 2,00,000.

STEP- ECAT scholarship recipient for being top 10 engineering category nationwide worth PKR 2,00,000.

PCS Scholarship recipient worth PKR 2,40,000.

NUST Merit Scholarship for top GPAs (2021 – 2024)

Captain Basketball: Captain Basketball team Cadet College HasanAbdal (Juniors – 2017)

REVIEWER AND GRANTS

Conferences: AAAL, ICDAR, Globecom, WCNC, ICASSP, ICC

Journals: IEEE TVT, IEEE Green Communications and Networks, IEEE Communication Letters, IEEE Wireless Communications, IEEE Wireless Communications Magazine

Grants: IEEE Globecom 2024 (Cape Town, SA)

Best Papers: 6G Summit Abu Dhabi (best poster nomination)