

HUMAIRA KOUSAR

☎ +82-010-2864-8311
🏠 Eueon-dong, Yuseong-gu, Daejeon, South Korea

✉ humairakousar32@kaist.ac.kr
🌐 www.linkedin.com/in/humaira-kousar-32b775136

Education

Korea Advanced Institute of Science and Technology, KAIST

Ph.D. in School of Electrical Engineering, Percentage: 92%
Advisor: Prof. Jaekyun Moon
Research Area: Active Learning and Distributed Machine Learning
Thesis: Efficient Data Acquisition Techniques in Deep Learning

Daejeon, South Korea
March 2022 – June 2026

Korea Advanced Institute of Science and Technology, KAIST

M.S. in School of Electrical Engineering, Percentage: 90%
Advisor: Prof. Jaekyun Moon
Thesis: Expediting Split Learning via Intermediate Feature Budgeting Strategy

Daejeon, South Korea
Aug 2020 - Feb 2022

National University of Sciences and Technology, NUST

B.S. in School of Electrical Engineering, CGPA/Percentage: 3.84/4.00
Advisor: Prof. Naveed Iqbal
Thesis: WHEGSTR: A Multiterrain Robot with C-Shaped Whegs, Implementation of Error Minimization Technique and using Artificial Neural Network (ANN)

Islamabad, Pakistan
Sep 2015 - July 2019

Superior College and University

Higher Secondary School Certification (Pre-Engineering)
Marks obtained: 936/1100 (85%)

Sialkot, Pakistan
Aug 2013 – April 2015

Professional Experience

Moon Lab, School of EE, KAIST

Research Assistant (Advisor: Prof. Jaekyun Moon)

- Main Research focus is on Federated Learning, Split Learning and Active Learning
- Developed Intermediate Feature Budgeting Strategy in split learning setup for expedite training and performance gain.
- Developed Efficient Data Selection via Weight Pruning and Network Fusion in Active learning setup.

Daejeon, South Korea
Sep 2020 - Present

School of Humanities, KAIST

Teaching Assistant

- Intermediate English Reading and Writing, (Advisor: Prof. Seonmin Park)
- Advance English Reading, (Advisor: Prof. Holly Wang)

Daejeon, South Korea
Sep 2022 - Dec 2022
Sep 2023 - Feb 2024

School of Electrical Engineering, KAIST

Teaching Assistant

- Machine Learning Basics and Practices (Advisor: Prof. Jaekyun Moon)

Daejeon, South Korea
Feb 2025 - June 2025

Government Degree College for Women, Sialkot

Computer Science Lecturer (Principal: Amna Rafiq)

- Work as Computer Science Lecturer

Sialkot, Pakistan
Oct 2019 – April 2020

Rohde & Schwarz, Pakistan (Pvt) Ltd.

Summer Intern (Supervisor: Wasif Nisar Abbasi)

- Completed six-week internship in Test and Measurement Dept.
- Work on different models of spectrum analyzers of R&S, Signal Generator, Vector Network Analyzer, EMC and also studied different Modulation Schemes.
- Secured 2nd Position in Final Presentation

Islamabad, Pakistan
Aug 2018 – Sep 2018

Pakistan Telecommunication Company Limited

Summer Intern (Supervisor: Naeem Najmi)

Sialkot, Pakistan
July 2017 – Aug 2017

- Completed six-week internship in WLL, Switching and Transmission Dept. and studied OFC, Outside Site Plant & Transmission Techniques.
- Involved in routinely maintenance and visits.

Research Publications

H Kousar, M Atif, H Ali, MH Kundi. "WHEGSTR: A Multiterrain Robot with C-Shaped Whegs, Implementation of Error Minimization Technique and using Artificial Neural Network (ANN)." 2019 *International Conference on Green and Human Information Technology (ICGHIT)*. IEEE, 2019.

Y Park, DJ Han, J Park, W Choi, **H Kousar**, J Moon. "Distribution Aware Active Learning via Gaussian Mixtures." *Workshop on Pitfalls of limited data and computation for Trustworthy ML, ICLR 2023*.

MM Rahimi, HI Bhatti, Y Park, **H Kousar**, J Moon. "EvoFed: Leveraging Evolutionary Strategies for Communication-Efficient Federated Learning." *Advances in Neural Information Processing Systems (NeurIPS)*, 2024.

H Kousar, HI Bhatti. "Pruning-based Data Selection and Network Fusion for Efficient Deep Learning". *ATTRIB, Advances in Neural Information Processing Systems (NeurIPS)*, 2024.

H Kousar, HI Bhatti, J Moon. "PruneFuse: Efficient Data Selection via Weight Pruning and Network Fusion". *(TMLR)*, 2026. (*Featured Certification*)

MM Rahimi, Y Park, **H Kousar**, HI Bhatti, DJ Han, J Moon. "Communication-Efficient Federated Learning via Model-Agnostic Projection Adaptation". *International Conference on Machine Learning (ICML)*, 2026. (*under review*)

Y Park, J Park, W Choi, **H Kousar**, DJ Han, J Moon. "Distribution Aware Active Learning via Gaussian Mixtures." *International Conference on Machine Learning (ICML)*, 2026. (*under review*)

H Kousar, J Moon. "CEAL: Computation Efficient Active Learning via Collective Information Signals." *International Conference on Machine Learning (ICML)*, 2026. (*under review*)

MM Rahimi, M Heidari, **H Kousar**, Daewon Seo, J Moon. "Low-Rank Aggregation via Optimal Right-Space Projection." *International Conference on Machine Learning (ICML)*, 2026. (*under review*)

HI Bhatti, **H Kousar**, J Moon. "Merging in the Small Room: A Spectral-Space Decomposition for Pruned Experts" *International Conference on Learning Representations (ICLR), LLA Workshop 2026*. (*under review*)

Patent

Device and Method for Distribution Aware Active Learning using Gaussian Mixture.

Younghyun Park, Jungwuk Park, Dong-jun Han, Wonjeong Choi, **Kousar Humaira** and Jaekyun Moon
Application Number: KR 10-2024-0035374, Application Date: Mar 13, 2024

Research Projects

Active Learning Algorithms for Efficient Utilization of Unlabeled Defense Data

Center for Applied Research in Artificial Intelligence (CARAI)
Funded by Agency for Defense Development (ADD); (2021 – Present)

Services as Conference Reviewer

ATTRIB, Advances in Neural Information Processing Systems (*NeurIPS*), 2024

AAAI Conference on Artificial Intelligence, 2026

WiML, Advances in Neural Information Processing Systems (*NeurIPS*), 2025

ICLR, International Conference on Learning Representations, 2026

Honors and Leadership

- Selected as “**International Student Mentor**” at **Daedeok High School**, Daejeon, South Korea
- Selected as **Student Mentor at International Scholar and Student Services (ISSS), KAIST** for 2021 Fall Semester Freshmen” and “2022 Spring Semester Freshmen”
- Worked as **Vice President** at Pakistan Student Association (**PSA**), **KAIST**, South Korea
- **Event Manager WIE-IEEE** (Women in Engineering-IEEE) NUST Student Branch [2018]-[2019]
- **Organizer and Host EE Winter Camp KAIST 2024**
- **Best Campus Ambassador** Award Winner in **PSYWSC'18**
- **Campus Ambassador of COMPPEC'19** from NUST university
- Worked as a **Speaker** in **workshops** by **IEEE** in university
- **Course Representative** at college level
- Secured **2nd Position** by presenting Senior year Project in **COMPPEC'19** (National Level Project Competition)
- Selected as **Volunteer** at “**1:1 English Program**” conducted by **KAIST Language Center**, South Korea
- **Distinction in Essay writing Competition** at Regional Level held by Chamber of Conference, Pakistan
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Social Work

Pakistan Red Crescent Society

Completed six-week volunteer work

June-July 2017

Languages

- English
- Urdu
- Korean
- Punjabi