# Kifayat Ullah, Ph.D.

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## Current Status

I have been working as an **Assistant Professor** at the Department of Mathematics, Riphah International University, Lahore Campus, since October 07, 2020.

## Education

**PhD in Mathematics** (2016-2020)
**Major:** Pure Mathematics (Specialization in the generalization of fuzzy set theory and its applications in decision making, pattern recognition, medical diagnosis, clustering, and networks)
**Institution:** International Islamic University Islamabad, Islamabad, Pakistan.
**Thesis Title:** Generalizations of Intuitionistic Fuzzy Sets and their Comparative Study.
**Grade/CGPA:** 3.66/4.00

**MS in Mathematics** (2014-2016)
**Major:** Fuzzy Set Theory and Its Applications
**Institution:** International Islamic University Islamabad, Islamabad, Pakistan.
**Thesis Title:** Decision Making Based on Bipolar Valued Hesitant Fuzzy Sets.
**Grade/CGPA:** 3.35

**BS in Mathematics** (2010-2014)
**Institution:** International Islamic University Islamabad, Islamabad, Pakistan.
**Grade/CGPA:** 3.68 (80.89%)

**Higher Secondary School** (2008-2010)
**Institution:** Board of Intermediate and Secondary Education (BISE) Peshawar, Pakistan.
**Grade/CGPA:** B (64%)

**Secondary School** (2006-2008)
**Institution:** Board of Intermediate and Secondary Education (BISE) Peshawar, Pakistan.
**Grade/CGPA:** A (73.3%)

## Professional Education

**Postgraduate Diploma (PGD)** (SPRING 2022-FALL 2022)
**Major:** Professional Education and Teaching Methodology
**Institution:** Riphah International University Islamabad, Islamabad, Pakistan.
**Grade/CGPA:** 3.07

## Distinctions

- First position in degree program "**BS in Mathematics**"

## Administrative Experience

- **In charge of Graduate Programs** at the Department of Mathematics, Riphah International University Lahore Campus Since March 29, 2024.
- **In charge of Undergraduate Programs** at the Department of Mathematics, Riphah International University Lahore Campus April 4, 2022 –March 29, 2024.
- **Convener, Admission Committee** at the Department of Mathematics, Riphah International University Lahore Campus Since June 24, 2021.
- **In charge of the Mentoring Program** at the Department of Mathematics, Riphah International University Lahore Campus for One Year.
- **Member University Assessment Committee** at Riphah International University Lahore Campus Since June 03, 2021.

## Research Overview

### CITATIONS (Research Profiles: *RESEARCHGATE GOOGLE SCHOLAR SCOPUS WEB OF SCIENCE ORCID LINKEDIN*)

| | | | | | |
|---|---|---|---|---|---|
| Total Publications | | | 140+ | | |
| Cumulative Impact Factor | | | 350+ | | |
| Google Scholar Citations | 4236 | Web of Science Citations | 2323 | Scopus Citations | 3199 |
| H-Index | 32 | H-Index | 22 | H-Index | 27 |
| I-10 Index | 71 | | | | |

*(Last updated on May 23, 2024)*

## Publications

***SELECTED ARTICLES***

1. **Ullah, K.**, Mahmood, T., Ali, Z., & Jan, N. (2020). On some distance measures of complex Pythagorean fuzzy sets and their applications in pattern recognition. *Complex & Intelligent Systems*. 6, 15-27. https://doi.org/10.1007/s40747-019-0103-6. **(IF: 4.927) (HJRS Category: X)**
2. **Ullah, K.**, Mahmood, T., & Garg, H. (2020). Evaluation of the Performance of Search and Rescue Robots Using T-spherical Fuzzy Hamacher Aggregation Operators. *International Journal of Fuzzy Systems*, 22(2), 570-582. https://doi.org/10.1007/s40815-020-00803-2. **(IF:4.673) (HJRS Category: W)**
3. **Ullah, K.** 2021. Picture Fuzzy McLaurin Symmetric Mean Operators and Their Applications in Solving Multi Attribute Decision Making Problems. *Mathematical Problems in Engineering*, https://doi.org/10.1155/2021/1098631 **(IF:1.305) (HJRS Category: X)**
4. Khan, M. R., **Ullah, K.**, Karamti, H., Khan, Q., & Mahmood, T. (2023). Multi-attribute group decision-making based on q-rung orthopair fuzzy Aczel–Alsina power aggregation operators. *Engineering Applications of Artificial Intelligence*, *126*, 106629. **(IF: 8.0) (HJRS Category: W)**
5. Mahmood, T., **Ullah, K.**, Khan, Q., and Jan, N. (2019). An Approach towards Decision Making and Medical Diagnosis Problems Using the Concept of Spherical Fuzzy Sets. *Neural Computing and Applications*. 31(11), 7041-7053. https://doi.org/10.1007/s00521-018-3521-2. **(IF: 4.774) (HJRS Category: W)**
6. Hussain, A., **Ullah, K.,** Pamucar, D., Haleemzai, I. and Tatić, D., 2023. Assessment of Solar Panel Using Multiattribute Decision-Making Approach Based on Intuitionistic Fuzzy Aczel Alsina Heronian Mean Operator. *International Journal of Intelligent Systems*, *2023*. https://doi.org/10.1155/2023/6268613. **(IF: 8.993) (HJRS Category: W)**
7. Wang, H. and **Ullah, K.**, (2022). T-spherical uncertain linguistic MARCOS method based on generalized distance and Heronian mean for multi-attribute group decision-making with unknown weight information. *Complex & Intelligent Systems*, pp.1-33. **(IF: 6.70) (HJRS Category: W)**
8. Jabeen, K., **Ullah, K.**, Pedrycz, W., Khan, Q., Ali, Z., & Yin, S. (2024). Pythagorean fuzzy aczel-alsina power bonferroni mean operators for multi-attribute decision-making. *Granular Computing*, *9*(1), 1-16. **(IF: 4.5) (HJRS Category: W)**

9. Koczy, L. T., Jan, N., Mahmood, T., & **Ullah, K.** (2020) Analysis of social networks and Wi-Fi networks by using the concept of picture fuzzy graphs. Soft Computing, 1-13. https://doi.org/10.1007/s00500-020-04959-9. **(IF: 3.643) (HJRS Category: W)**
10. Jan, N., Mahmood, T., Zedam, L., **Ullah, K.**, Alcantud, J. C. R., & Davvaz, B. (2019). Analysis of Social Networks, Communication Networks and Shortest Path Problems in the Environment of Interval-Valued q-Rung Ortho Pair Fuzzy Graphs. *International Journal of Fuzzy Systems*, 21(6), 1687-1708. **(IF:4.406) (HJRS Category: W)**
11. Wang, H., Feng, L., Deveci, M., **Ullah, K.** and Garg, H., (2024). A novel CODAS approach based on Heronian Minkowski distance operator for T-spherical fuzzy multiple attribute group decision-making. *Expert Systems with Applications*, *244*, p.122928. **(IF: 12.6) (HJRS Category: W)**

***ALL ARTICLES***

1. **Ullah, K.**, Garg, H., Mahmood, T., Jan, N. and Ali, Z. (2020) Correlation coefficients for T-spherical fuzzy sets and their applications in clustering and multi-attribute decision making. Soft Computing. 24, 1647–1659. https://doi.org/10.1007/s00500-019-03993-6. **(IF: 3.643) (HJRS Category: W)**
2. **Ullah, K.**; Hassan, N.; Mahmood, T.; Jan, N.; Hassan, M. (2019). Evaluation of Investment Policy Based on Multi-Attribute Decision-Making Using Interval Valued T-Spherical Fuzzy Aggregation Operators. Symmetry, 11 (3), 357. https://doi.org/10.3390/sym11030357. **(IF: 2.645) (HJRS Category:X)**
3. **Ullah, K.**, Mahmood, T., & Jan, N. (2018). Similarity Measures for T-Spherical Fuzzy Sets with Applications in Pattern Recognition. Symmetry, 10(6), 193. **(IF: 2.143) (HJRS Category:W)**
4. **Ullah K.,** Garg H., Gul Z., Mahmood T., Khan Q., Ali Z. (2021). Interval Valued T-Spherical Fuzzy Information Aggregation Based on Dombi t-Norm and Dombi t-Conorm for Multi-Attribute Decision Making Problems. *Symmetry*. 13(6), 1053. https://doi.org/10.3390/sym13061053 **(IF: 2.713) (HJRS Category: X)**
5. **Ullah, K.**, Ali, Z., Mahmood, T., Garg, H. and Chinram, R., Methods for multi-attribute decision making, pattern recognition and clustering based on T-spherical fuzzy information measures. Journal of Intelligent & Fuzzy Systems, (Preprint), pp.1-21. doi: 10.3233/JIFS-210402 **(IF: 1.851) (HJRS Category: X)**
6. **Ullah, K.,** Naeem, M., Hussain, A., Waqas, M. and Haleemzai, I., (2023). Evaluation of Electric Motor Cars Based Frank Power Aggregation Operators under Picture Fuzzy Information and a Multi-Attribute Group Decision-Making Process. *IEEE Access*. 11, 67201–67219. **DOI:** 10.1109/ACCESS.2023.3285307 (**IF: 3.9**) **(HJRS Category: X)**
7. **Ullah, K.,** Kousar, Z., Pamucar, D., Jovanov, G., Vranješ, Đ., Hussain, A. and Ali, Z., 2022. Application of Hamacher aggregation operators in the selection of the cite for pilot health project based on complex T-spherical fuzzy information. *Mathematical Problems in Engineering*, *2022*. Article ID 3605641. https://doi.org/10.1155/2022/3605641. (**IF: 1.305**) **(HJRS Category: X)**
8. **Ullah, K.**; Mahmood, T.; Jan, N. (2019). Some averaging aggregation operators for t-spherical fuzzy sets and their applications in multi-attribute decision making. In Proceedings of the International Conference on Soft Computing & Machine Learning (ICSCML), Wuhan, China, 26–28 April 2019. **(HEC Sponsored, Conference Paper)**
9. **Ullah, K.,** Gul, Z., Garg, H. and Mahmood, T., (2022). A Multi-attribute Decision Making Method for the Evaluation of Software Enterprise Based on T-Spherical Fuzzy Dombi Aggregation Information. In *International Conference on Intelligent and Fuzzy Systems* (pp. 714-722). Springer, Cham. **(Book Chapter)**
10. **Ullah, K.**, Mahmood, T., Jan, N. and Ali, Z., (2018). A Note on Geometric Aggregation Operators in Spherical Fuzzy Environment and its Application in Multi-Attribute Decision Making. Journal of Engineering and Applied Sciences, 37(2), 75-86. https://doi.org/10.25211/jeas.v37i2.2871. **(HJRS Category: X)**
11. **Ullah K,** Mahmood T, Jan N, Broumi S, Khan Q (2018). On Bipolar-Valued Hesitant Fuzzy Sets and Their Applications in Multi-Attribute Decision Making. The Nucleus. 55(2), 85-93. **(HJRS Category: X)**

12. **Ullah, K.**, Ali, Z., Jan, N., Mahmood, T. and Maqsood, S., 2018. Multi-attribute decision making based on averaging aggregation operators for picture hesitant fuzzy sets. Technical Journal, 23(04), 84-95. **(HJRS Category: Y)**
13. Akram, M., **Ullah, K.**, Pamucar, D. (2022). Performance Evaluation of the Solar Energy Cells Using the Interval Valued T-Spherical Fuzzy Bonferroni Mean Operators. Energies. *15*(1), p.292 **(IF: 3.004) (HJRS Category: W)**
14. Hussain, A., **Ullah, K.,** Senapati, T. and Moslem, S., (2023). Complex spherical fuzzy Aczel Alsina aggregation operators and their application in assessment of electric cars. *Heliyon*. https://doi.org/10.1016/j.heliyon.2023.e18100 **(IF: 4.00) (HJRS Category: W)**
15. Hussain, A., **Ullah, K.**, Garg, H., & Mahmood, T. (2024). A novel multi-attribute decision-making approach based on T-spherical fuzzy Aczel Alsina Heronian mean operators. *Granular Computing*, *9*(1), 1-24. **(IF: 4.5) (HJRS Category: W)**
16. Hussain, A., Latif, S., **Ullah, K.**, Garg, H., & Al-Quran, A. Pythagorean fuzzy Aczel Alsina Hamy mean aggregation operators and its applications to multi-attribute decision-making process. *Journal of Intelligent & Fuzzy Systems*, (Preprint), 1-31. **(IF: 2.0) (HJRS Category: X)**
17. Wang, Y., Hussain, A., Yin, S., **Ullah, K.**, & Bozanic, D. Decision-Making for Solar Panel Selection Using Sugeno-Weber Triangular Norm-Based Approach with q-Rung Orthopair Fuzzy Sets Information. *Frontiers in Energy Research*, *11*, 1293623. **(IF: 3.4) (HJRS Category: W)**
18. Jin, H., Hussain, A., **Ullah, K.**, & Javed, A. (2022). Novel complex Pythagorean fuzzy sets under Aczel–Alsina operators and their application in multi-attribute decision making. *Symmetry*, *15*(1), 68. **(IF: 2.7) (HJRS Category: W)**
19. **Ullah, K.**, Raza, A., Senapati, T., & Moslem, S. (2024). Multi-attribute decision-making method based on complex T-spherical fuzzy frank prioritized aggregation operators. *Heliyon*. pp. 1-25. **(IF: 4.0) (HJRS Category: W)**
20. Khan, M. R., **Ullah, K.**, Khan, Q., & Haleemzai, I. (2024). Confidence Levels Measurement of Mobile Phone Selection Using a Multiattribute Decision-Making Approach with Unknown Attribute Weight Information Based on T-Spherical Fuzzy Aggregation Operators. *Discrete Dynamics in Nature and Society*, *2024*. **(IF: 1.4) (HJRS Category: X)**
21. Hussain, A., Alsanad, A., **Ullah, K.**, Ali, Z., Jamil, M. K., & Mosleh, M. A. (2021). Investigating the short-circuit problem using the planarity index of complex q-rung orthopair fuzzy planar graphs. *Complexity*, *2021*, 1-22. **(IF: 2.3) (HJRS Category: W)**
22. Hussain, A., **Ullah, K.**, Pamucar, D., & Vranješ, Đ. (2022). A multi-attribute decision-making approach for the analysis of vendor management using novel complex picture fuzzy Hamy mean operators. *Electronics*, *11*(23), 3841. **(IF: 2.9) (HJRS Category: Y)**
23. **Ullah, K.**, Hussain, A., Mahmood, T., Ali, Z., Alabrah, A., & Rahman, S. M. M. (2022). Complex q-rung orthopair fuzzy competition graphs and their applications. *Electron. Res. Arch*, *30*(4), 1558-1605. **(IF: 0.8) (HJRS Category: Y)**
24. Hussain, A., **Ullah, K.**, Al-Quran, A., & Garg, H. (2023). Some T-spherical fuzzy dombi hamy mean operators and their applications to multi-criteria group decision-making process. *Journal of Intelligent & Fuzzy Systems*, (Preprint), 1-21. **(IF: 2.0) (HJRS Category: X)**
25. Kalsoom, U., **Ullah, K.**, Akram, M., Pamucar, D., Senapati, T., Naeem, M., ... & Moslem, S. (2023). Schweizer–Sklar Power Aggregation Operators Based on Complex Interval-Valued Intuitionistic Fuzzy Information for Multi-attribute Decision-Making. *International Journal of Computational Intelligence Systems*, *16*(1), 170. **(IF: 2.9) (HJRS Category: X)**
26. Khan, M. R., **Ullah, K.**, Khan, Q., & Awsar, A. (2023). Some Aczel–Alsina Power Aggregation Operators Based on Complex q-Rung Orthopair Fuzzy Set and Their Application in Multi-Attribute Group Decision-Making. *IEEE Access*. (11), pp.115110 – 115125 **(IF: 3.9) (HJRS Category: W)**
27. Hussain, A., **Ullah, K.**, Senapati, T., & Moslem, S. (2023). A robust decision-making approach for supplier selection using complex picture fuzzy information involving prioritization of attributes. *IEEE Access*. 11, pp. 91807 - 91830 (**IF: 3.9) (HJRS Category: W)**

28. Hussain, A., **Ullah, K.,** Yang, M.S. and Pamucar, D., (2022). Aczel-Alsina Aggregation Operators on T-Spherical Fuzzy (TSF) Information with Application to TSF Multi-Attribute Decision Making. *IEEE Access*. 10, 26011 – 26023. **(IF: 3.367) (HJRS Category: W)**
29. Hussain, A., **Ullah, K.**, Mubasher, M., Senapati, T. and Moslem, S., (2023). Interval-Valued Pythagorean Fuzzy Information Aggregation Based on Aczel-Alsina Operations and Their Application in Multiple Attribute Decision Making. *IEEE Access*. 10.1109/ACCESS.2023.3244612 **(IF: 3.367) (HJRS Category: W)**
30. Akram, M., **Ullah, K.,** Ćirović, G. and Pamucar, D., 2023. Algorithm for Energy Resource Selection Using Priority Degree-Based Aggregation Operators with Generalized Orthopair Fuzzy Information and Aczel–Alsina Aggregation Operators. *Energies*, *16*(6), p.2816. https://doi.org/10.3390/en16062816 **(IF: 3.252) (HJRS Category: W)**
31. Ijaz, S., **Ullah, K.,** Akram, M. and Pamucar, D. (2023). Approaches to multi-attribute group decision-making based on picture fuzzy prioritized Aczel–Alsina aggregation information. *AIMS Mathematics*, *8*(7), pp.16556-16583. 10.3934/math.2023847 **(IF: 2.793) (HJRS Category: W)**
32. Karamat, T., **Ullah, K.**,ide Pamucar, D. and Akram, M., (2023) Applications Aczel-Alsina t-norm and t-conorm for the assessment of fire extinguishers using Pythagorean fuzzy information. *Journal of Intelligent & Fuzzy Systems*, (Preprint), pp.1-27. **(IF: 2.00) (HJRS Category: X)**
33. Latif, S., **Ullah, K.**, & Hussain, A. (2023). Novel Single Valued Neutrosophic Prioritized Aczel Alsina Aggregation Operators and Their Applications in MultiAttribute Decision Making. *Neutrosophic Sets and Systems*, *58*(1), 11. **(IF: 2.4) (HJRS Category: Y)**
34. Hussain, A., **Ullah, K.,** Wang, H. and Bari, M., (2022). Assessment of the Business Proposals Using Frank Aggregation Operators Based on Interval-Valued T-Spherical Fuzzy Information. Journal of Function Spaces, Article ID: 2880340. **(IF: 1.807) (HJRS Category: X)**
35. Hussain, A., **Ullah, K**., Alshahrani, M.N., Yang, M.S. and Pamucar, D., (2022). Novel Aczel–Alsina Operators for Pythagorean Fuzzy Sets with Application in Multi-Attribute Decision Making. *Symmetry*, *14*(5), p.940. **(IF: 2.713) (HJRS Category: W)**
36. Waqar, M.; **Ullah, K.**; Pamucar, D.; Jovanov, G.; Vranješ, Đ. (2022) An Approach for the Analysis of Energy Resource Selection Based on Attributes by Using Dombi T-Norm Based Aggregation Operators. *Energies*, *15*, 3939. https://doi.org/10.3390/en15113939. **(IF: 3.004) (HJRS Category: W)**
37. Wang, Y., **Ullah, K.**, Mahmood, T., Garg, H., Zedam, L., Zeng, S. and Li, X., (2022). Methods for Detecting Covid-19 Patients Using Interval-Valued T-Spherical Fuzzy Relations and Information Measures. *International Journal of Information Technology & Decision Making*, pp.1-28. **(IF: 2.22) (HJRS Category: w)**
38. Jan N, **Ullah K**, Mahmood T, Garg, H., Davvaz B, Saeid A. B., Broumi S. (2019). Some Root Level Modifications in Interval Valued Fuzzy Graphs and Their Generalizations Including Neutrosophic Graphs. Mathematics, 7(1), 72-93. https://doi.org/10.3390/math7010072. **(IF: 1.747) (HJRS Category: X)**
39. Garg, H., **Ullah, K.**; Mahmood, T.; Hassan, N.; Jan, N. (2021) T-Spherical Fuzzy Power Aggregation Operators and Their Applications in Multi-Attribute Decision Making. Journal of Ambient Intelligence and Humanized Computing. https://doi.org/10.1007/s12652-020-02600-z **(IF: 7.104) (HJRS Category: W)**
40. Garg, H., **Ullah, K.**; Mahmood, T.; Ali, Z.; Hamiden, K. (2022) Multi-attribute decision-making problems based on aggregation operators with complex interval-valued T-spherical fuzzy information. MAEJO International Journal of Science and Technology. 16(1), 51-65. **(IF: 0.636) (HJRS Category: X)**
41. Naseem, A., **Ullah, K.**, Akram, M., Božanić, D. and Ćirović, G., (2022). Assessment of Smart Grid Systems for Electricity Using Power Maclaurin Symmetric Mean Operators Based on T-Spherical Fuzzy Information. *Energies*, *15*(21), p.7826. **(IF: 3.252) (HJRS Category: W)**
42. Sarfraz, M., **Ullah, K.**, Akram, M., Pamucar, D. and Božanić, D., (2022). Prioritized Aggregation Operators for Intuitionistic Fuzzy Information Based on Aczel–Alsina T-Norm and T-Conorm and Their Applications in Group Decision-Making. *Symmetry*, *14*(12), p.2655. **(IF: 2.94) (HJRS Category: W)**
43. Ashraf, A., **Ullah, K.**, Božanić, D., Hussain, A., Wang, H. and, Puška, A. (2022). An Approach for the Assessment of Multi-National Companies Using

Multi-Attribute Decision Making Process Based on Interval Valued Spherical Fuzzy Maclaurin Symmetric Mean Operators. *Axioms*, *12*(1), p.4. **(IF: 1.824) (HJRS Category: X)**

44. Jabeen, K., **Ullah, K.,** Akram, M. and Haleemzai, I., (2023). Interval Valued Picture Fuzzy Aczel–Alsina Aggregation Operators and Their Application by Using the Multiattribute Decision Making Problem. *Journal of Mathematics*, *2023*. https://doi.org/10.1155/2023/1707867 **(IF:1.555) (HJRS Category: X)**
45. Mahmood, T., **Ullah, K.**, Ullah, M., Jan, N., Deli, I., & Khan, Q. (2017). Some Aggregation Operators for Bipolar-Valued Hesitant Fuzzy Information based on Einstein Operational Laws. Journal of Engineering and Applied Sciences, 36(2), 63-72. **(HJRS Category: X)**
46. Broumi, S., **Ullah, K.**, Bakali, A., Talea, M., Singh, P. K., Mahmood, T. Smarandache, F., Bahnasse, A., Patro, S. K., and De Oliveira, A. (2018). Novel System and Method for Telephone Network Planning Based on Neutrosophic Graph. Global Journal of Computer Science and Technology, 18(2), 1-10.
47. Ashraf, A., **Ullah, K.**, Hussain, A. and Bari, M., (2022). Interval-Valued Picture Fuzzy Maclaurin Symmetric Mean Operator with application in Multiple Attribute Decision-Making. *Reports in Mechanical Engineering*, *3*(1), pp.301-317. **(HJRS Category: W)**
48. Khan, R., **Ullah, K.**, Pamucar, D. and Bari, M., (2022). Performance measure using a multi-attribute decision making approach based on Complex T-spherical fuzzy power aggregation operators. *Journal of Computational and Cognitive Engineering*. https://doi.org/10.47852/bonviewJCCE696205514.
49. Hussain, A., **Ullah, K.,** Ahmad, J., Karamti, H., Pamucar, D. and Wang, H., (2022). Applications of the multiattribute decision-making for the development of the tourism industry using complex intuitionistic fuzzy Hamy mean operators. *Computational Intelligence and Neuroscience*, *2022*. Article ID 8562390. https://doi.org/10.1155/2022/8562390. **(IF: 3.90) (HJRS Category: X)**
50. Hussain, A., Zhu, X., **Ullah, K.**, Pamucar, D., Rashid, M., & Yin, S. (2024). Recycling of waste materials based on decision support system using picture fuzzy Dombi Bonferroni means. *Soft Computing*, 1-27. **(IF: 4.1) (HJRS Category: W)**
51. Wang, H., Feng, L., **Ullah, K.**, & Garg, H. (2024). A novel CE-PT-MABAC method for T-spherical uncertain linguistic multiple attribute group decision-making. *Complex & Intelligent Systems*, 1-32. **(IF: 5.8) (HJRS Category: W)**
52. Al-Qubati, A. A., Zedam, L., **Ullah, K.**, & Al-Qahtani, H. F. (2023). Choquet-Integral Aggregation Operators Based on Hamacher t-norm and t-conorm for Complex Intuitionistic Fuzzy TOPSIS Technique to Deal with Socio-Economic Problems. *IEEE Access*. pp. 3098 - 3113 **(IF: 3.9) (HJRS Category: W)**
53. Garg, H., Hussain, A., & **Ullah, K.** (2023). Multi-attribute group decision-making algorithm based on intuitionistic fuzzy rough Schweizer-Sklar aggregation operators. *Soft Computing*, 1-12. **(IF: 4.1) (HJRS Category: W)**
54. Hussain, A., Zhu, X., **Ullah, K.**, Sarfaraz, M., Yin, S., & Pamucar, D. (2023). Multi-attribute group decision-making based on Pythagorean fuzzy rough Aczel-Alsina aggregation operators and its applications to Medical diagnosis. *Heliyon*, *9*(12). **(IF: 4.0) (HJRS Category: W)**
55. Hussain, A., Liu, Y., Ullah, K., Rashid, M., Senapati, T. and Moslem, S., 2024. Decision algorithm for picture fuzzy sets and Aczel Alsina aggregation operators based on unknown degree of wights. *Heliyon*, *10*(6). https://doi.org/10.1016/j.heliyon.2024.e27548. **(IF: 4.0) (HJRS Category: W)**
56. Hussain, A., **Ullah, K.,** Latif, S., Senapati, T., Moslem, S. and Esztergar-Kiss, D., 2024. Decision algorithm for educational institute selection with spherical fuzzy heronian mean operators and Aczel-Alsina triangular norm. *Heliyon*. 10 (6). https://doi.org/10.1016/j.heliyon.2024.e28383. **(IF: 4.0) (HJRS Category: W)**
57. Zhang, N., Khan, M.R., **Ullah, K.,** Saad, M. and Yin, S., 2024. Aczel–Alsina T-norm based group decision-making technique for the evaluation of electric cars using generalized orthopair fuzzy aggregation information with unknown weights. *Heliyon*. 10(6). https://doi.org/10.1016/j.heliyon.2024.e26921. **(IF: 4.0) (HJRS Category: W)**
58. Hussain, A., **Ullah, K.,** Garg, H. and Mahmood, T., 2024. A novel multi-attribute decision-making approach based on T-spherical fuzzy Aczel Alsina Heronian mean operators. *Granular Computing*, *9*(1), pp.1-24. https://doi.org/10.1007/s41066-023-00442-6. **(IF: 5.5) (HJRS Category: X)**

59. Jabeen, K., **Ullah, K.,** Pedrycz, W., Khan, Q., Ali, Z. and Yin, S., 2024. Pythagorean fuzzy aczel-alsina power bonferroni mean operators for multi-attribute decision-making. *Granular Computing*, *9*(1), pp.1-16. https://doi.org/10.1007/s41066-023-00428-4. **(IF: 5.5) (HJRS Category: X)**
60. Ma, L., Hussain, A., **Ullah, K.,** Bibi, S. and Yin, S., 2024. Decision Algorithm for q-Rung Orthopair Fuzzy Information Based on Schweizer-Sklar Aggregation Operators With Applications in Agricultural Systems. *IEEE Access*, *12*, pp.25762-25778. 10.1109/ACCESS.2024.3359903. **(IF: 3.9) (HJRS Category: W)**
61. Ayaz, S., Hussain, A., **Ullah, K.**, Khan, N., Siddique, I., & Younis, J. A. (2023). Evaluation of Cryptocurrency Markets Based on q-Rung Orthopair Fuzzy Hypersoft Frank Approach. *IEEE Access*, *11*, 134547-134556. **(IF: 3.9) (HJRS Category: W)**
62. Javed, M., Javeed, S., **Ullah, K.**, & Haleemzai, I. (2023). An Approach to Multi-Attribute Decision-Making for Olive Trees Plantation Site Selection using Spherical Fuzzy Neutrality Aggregation Operators. *IEEE Access*, 11, 17403 – 117422. **(IF: 3.9) (HJRS Category: W)**
63. Hussain, A., Liu, Y., **Ullah, K.**, Amjad, A., & Awsar, A. (2023). Decision-Making with Unknown Weights for the Performance of Digital Devices in Healthcare Systems Based on Interval Valued T-Spherical Fuzzy Information. *IEEE Access*, 12, 13601 – 13625. **(IF: 3.9) (HJRS Category: W)**
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97. Yin, S., Guo, F., Yu, Y., Li, Y. and **Ullah, K.**, (2023). Practical teaching method innovation decisions related to labor and reading at agricultural colleges based on entropy fuzzy AHP combination weights. *AIMS Mathematics*, *8*(4), pp.7641-7661. **(IF: 2.739) (HJRS Category: W)**
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132. Broumi, S., Talea, M., Bakali, A., Asmae, G., Mahmood, T., Smarandache, F. and **Ullah, K.**, (2020), October. NSPP: A Novel algorithm for neutrosophic shortest path problem. In 2020 2nd International Conference on Computer and Information Sciences (ICCIS) (pp. 1-5). IEEE. **(Conference Paper)**

133. **Ullah, K.**, Sarfraz, M., Akram, M., & Ali, Z. (2023). Identification and Classification of Prioritized Aczel-Alsina Aggregation Operators Based on Complex Intuitionistic Fuzzy Information and Their Applications in Decision-Making Problem. In *Fuzzy Optimization, Decision-making and Operations Research: Theory and Applications* (pp. 377-398). Cham: Springer International Publishing.

134. Broumi, S., **Ullah, K.,** Mahmood, T., Talea, M., Bakali, A., Smarandache, F., Nagarajan, D. and Lathamaheswari, M. (2021). Trends on Extension and Applications of Neutrosophic Graphs to Robots. Toward Humanoid Robots: The Role of Fuzzy Sets. https://www.springer.com/gp/book/9783030671624 **(Book Chapter)**

**HJRS Link: https://hjrs.hec.gov.pk/**

**Research Grants**

1. ORIC RESEARCH GRANT 2020-2021

Title: Algorithms for T-Spherical Fuzzy Information and Their Applications: Soft Computing Techniques

2. ORIC RESEARCH GRANT 2021-2022

Title: Soft computing methods based on spherical and T spherical fuzzy information and their applications

3. ORIC RESEARCH GRANT 2023-2024

Title: Decision support systems based on uncertain information using fuzzy sets and their extensions

## Editorial and Reviewer Roles

1. **Associate Editor** of "Journal of Intelligent and Fuzzy Systems".
2. **Associate Editor** of "Operations Research and Engineering Letters".
3. **Associate Editor** of "Journal of Applied Math".
4. **Associate Editor** of "Decision Making and Analysis".

5. **Guest Editor** of a special issue for the Journal **Frontiers in Environmental Sciences** (HJRS Category: W, Scopus Indexed, Q2)

Total Verified Reviews: 338
Total Verified Editorial Decisions: 24
**Source** (https://www.webofscience.com/wos/author/record/V-5098-2019)

## Research Students Supervision

**PhD: (05 in Progress)**

| S. No | Name | Thesis Title | Status |
|---|---|---|---|
| 1. | Akram Maria | INVESTIGATION AND APPLICATIONS OF SOME AGGREGATION OPERATORS IN DECISION MAKING PROBLEMS | Thesis Submitted |
| 2. | Abrar Hussain | A STUDY OF SOME AGGREGATION OPERATORS AND DECISION-MAKING PROBLEMS BASED ON EXTENSIONS OF FUZZY SET | Requirements Completed. Thesis Writing Phase |
| 3. | Amir Hussain | DECISION SUPPORT SYSTEMS BASED ON EXTENSIONS OF FUZZY SETS WITH APPLICATION | Title Approved from BASR |
| 4. | Muhammad Rizwan Khan | INVESTIGATION OF ALGORITHMS AND METHODS FOR DECISION SUPPORT SYSTEMS USING AGGREGATION OPERATORS | Title Approved from BASR |
| 5. | Khalida Jabeen | APPLICATIONS OF SOME GENERALIZED AGGREGATION OPERATIONS BASED ON FUZZY SET EXTENSIONS WITH UNKNOWN WEIGHTS | Title Approved from BASR |

**Masters: (34 Completed 06 in progress)**

| S. No | Name | Thesis Title | Status |
|---|---|---|---|
| 1. | Zareena Kousar | INVESTIGATION OF T-SPHERICAL FUZZY HAMACHER AGGREGATION OPERATORS IN DECISION MAKING PROBLEMS | Completed |

| | | | |
|---|---|---|---|
| 2. | Zunaira Gul | A STUDY OF DOMBI AGGREGATION OPERATORS IN T-SPHERICAL FUZZY ENVIRONMENT WITH APPLICATIONS | Completed |
| 3. | Adeel Ahmad | ON THE STUDY OF T-SPHERICAL FUZZY MACLAURIN SYMMETRIC MEAN OPERATORS | Completed |
| 4. | Abrar Hussain | ON THE GENERALIZATIONS OF Q-RUNG ORTHOPAIR FUZZY GRAPHS WITH APPLICATIONS | Completed |
| 5. | Amina Azam | ON SOME T-SPHERICAL FUZZY LOGARITHMIC AGGREGATION OPERATORS AND THEIR APPLICATIONS | Completed |
| 6. | Najma Parveen | APPLICATIONS OF T-SPHERICAL FUZZY POWER AGGREGATION OPERATORS IN DECISION MAKING | Completed |
| 7. | Muhammad Usman | A STUDY OF COMPLEX INTUITIONISTIC LINGUISTIC FUZZY AGGREGATION OPERATORS AND THEIR APPLICATIONS | Completed |
| 8. | Mazhar Ali | SOME ASPECTS OF COMPLEX Q-RUNG ORTHOPAIR FUZZY GRAPHS WITH APPLICATIONS | Completed |
| 9. | Wajeeha Javed | SOME DOMBI AGGREGATION OPERATORS FOR INTERVAL VALUED SPHERICAL FUZZY SETS | Completed |
| 10. | M Muneer Hussain | TWO NEW CORRELATION COEFFICIENTS BASED ON T-SPHERICAL FUZZY INFORMATION AND THEIR APPLICATIONS | Completed |
| 11. | M Nabeel Abid | A NEW SIMILARITY MEASURE BASED ON T-SPHERICAL FUZZY INFORMATION AND ITS APPLICATIONS IN PATTERN RECOGNITION | Completed |
| 12. | Sidra Sakhi | ON SOME DISTANCE AND SIMILARITY MEASURES BASED ON T-SPHERICAL FUZZY INFORMATION UNDER UNCERTAINTIES WITH APPLICATIONS | Completed |
| 13. | Kashif Ali | ON SOME SINE TRIGONOMETRIC AGGREGATION OPERATORS OF T-SPHERICAL FUZZY SETS AND THEIR APPLICATIONS IN DECISION MAKING | Completed |
| 14. | Ansa Ashraf | A STUDY OF PICTURE FUZZY INFORMATION BASED MACLAURIN SYMMETRIC MEAN OPERATORS AND THEIR APPLICATION | Completed |
| 15. | Hafiz Muhammad Sajjad | SOME MACLAURIN SYMMETRIC MEAN OPERATORS BASED ON SPHERICAL FUZZY INFORMATION | Completed |
| 16. | Mujab Waqar | ON INTERVAL VALUED INTUITIONISTIC FUZZY DOMBI AGGREGATION OPERATORS AND THEIR APPLICATION | Completed |
| 17. | Muhammad Mubasher | A STUDY OF INTERVAL VALUED PYTHAGOREAN FUZZY ACZEL-ALSINA AGGREGATION OPERATORS AND THEIR APPLICATION | Completed |
| 18. | Ansab Abbas | A STUDY OF EXPONENTIAL AGGREGATION OPERATORS AND THEIR APPLICATIONS IN MULTI-ATTRIBUTE DECISION MAKING | Completed |
| 19. | Umair Kamran | SOME GENERALIZED BONFERRONI MEAN OPERATORS FOR PICTURE FUZZY INFORMATION AND THEIR APPLICATION | Completed |
| 20. | Sajid Latif | INVESTIGATION OF IMPROVED MACLAURIN SYMMETRIC MEAN OPERATORS FOR T-SPHERICAL FUZZY INFORMATION AND THEIR APPLICATIONS IN DECISION MAKING | Completed |
| 21. | Areeba Naseem | SOME SINGLE VALUED NEUTROSOPHIC ACZEL ALSINA AGGREGATION OPERATORS FOR MULTIPLE ATTRIBUTE DECISION MAKING | Completed |
| 22. | Sughra Bibi | A STUDY OF PICTURE FUZZY INTERACTION HAMY MEAN OPERATORS WITH APPLICATIONS | Completed |
| 23. | Naveed Ahmad | SOME COMPLEX T-SPHERICAL FUZZY FRANK AGGREGATION OPERATORS AND THEIR | Completed |

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|---|---|---|---|
| | | APPLICATIONS IN MULTIPLE ATTRIBUTE DECISION MAKING | |
| 24. | Saba Ijaz | A STUDY OF ACZEL ALSINA AGGREGATION OPERATORS FOR PICTURE FUZZY INFORMATION AND THEIR APPLICATIONS IN GROUP DECISION MAKING | Completed |
| 25. | Tahira Karamat | SOME PYTHAGOREAN FUZZY AGGREGATION OPERATORS FOR DECISION MAKING PROBLEMS BASED ON ACZEL ALSINA T-NORM AND T-CONORM | Completed |
| 26. | Alina Amjad | SOME SPHERICAL FUZZY INTERACTION HAMY MEAN OPERATORS FOR MULTI-ATTRIBUTE GROUP DECISION MAKING | Completed |
| 27. | Ali Raza | SOME PRIORITIZED FRANK AGGREGATION OPERATORS FOR T-SPHERICAL FUZZY INFORMATION AND THEIR APPLICATIONS | Completed |
| 28. | Mehwish Sarfraz | A STUDY OF PRIORITIZED ACZEL ALSINA AGGREGATION OPERATORS FOR INTUITIONISTIC FUZZY INFORMATION AND THEIR APPLICATIONS | Completed |
| 29. | Muhammad Rashid | SOME POWER AGGREGATION OPERATORS BASED ON ACZEL ALSINA T-NORM AND T-CONORM FOR PICTURE FUZZY GROUP DECISION MAKING | Completed |
| 30. | Muhammad Waqas | SOME PICTURE FUZZY FRANK POWER AGGREGATION OPERATORS AND THEIR APPLICATIONS | Completed |
| 31. | Aisha Ghaffar | SOME NEW SIMILARITY MEASURES FOR PICTURE FUZZY INFORMATION WITH APPLICATIONS | Completed |
| 32. | Muhammad Safdar Nazeer | MULTI-ATTRIBUTE DECISION MAKING BASED ON ACZEL-ALSINA AGGREGATION OPERATORS FOR INTERVAL-VALUED T-SPHERICAL FUZZY INFORMATION | Completed |
| 33. | Umme Kulsoom | SOME SCHWEIZER-SKLAR POWER AGGREGATION OPERATORS BASED ON COMPLEX INTERVAL-VALUED INTUITIONISTIC FUZZY INFORMATION | Completed |
| 34. | Maryam Saeed | MULTI-ATTRIBUTE DECISION-MAKING BASED ON COMPLEX INTERVAL-VALUED INTUITIONISTIC FUZZY FRANK AGGREGATION OPERATORS | Completed |

**RESEARCH INTERESTS**

- Fuzzy Algebra
- Fuzzy Sets, Rough Sets, and Soft Sets
- Aggregation Operators
- Similarity, Distance & Entropy Measures
- Fuzzy Relations and Fuzzy Graph Theory
- Graph Algorithms
- Multi-Attribute Decision making
- Medical Diagnosis in Fuzzy Environment
- Pattern Recognition & Cluster Analysis
- Decision Sciences

## Academic Experience

| Position | Duration | Institution | Subjects Taught |
|---|---|---|---|
| Assistant Professor | Oct 2020- to date | Riphah International University Lahore Campus | Group Theory \| Set Topology \| Advanced Ring Theory \| Fuzzy Logic & Algebra \| Rings & Fields \| Functional Analysis \| Linear Algebra \| Elements of Set Theory and Logics \| Introduction to Statistics \| Calculus and Analytical Geometry |

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|---|---|---|---|
| Lecturer | 2014-2017 | Chanab Group of Colleges Islamabad, Pakistan. | Higher Secondary School Mathematics |
| Visiting Lecturer | 2017-2020 | International Islamic University Islamabad | Group Theory \| Ring & Fields \| Theory of Modules \| Elements of Set Theory and Logics |
| Visiting Lecturer | 2018-2019 | Federal Urdu University of Arts, Science and Technology | Differential Equations \| Linear Algebra |

## Research Fellowship and Conferences

- **Research Fellow** at the Department of Data Analysis and Mathematical Modeling, Ghent University, Ghent, Belgium under the IRSIP program of the Higher Education Commission (HEC) of Pakistan. **(Oct 2019- May 2020)**
- Participated as **"Invited Speaker"** at "International Conference on Soft Computing & Machine Learning (SCML2019)" April 26th-29th, Wuhan, China Sponsored by the Higher Education Commission (HEC) of Pakistan.
- Participated as **an Invited Speaker"** at " National Conference on Pure and Applied Mathematics (NCPAM-2024)" on April 29-30, 2024, at Sargodha University, Sargodha, Pakistan.
- Participated as **an Invited Speaker"** at "National Conference on Research in Mathematics (NCRM-2021)" on March 20, 2021, at Riphah International College, Bahawalpur, Pakistan.
- Participated as **"Invited Speaker"** at "A workshop on Recent Trends on Research in Mathematical Analysis" August 21st-23rd, 2022, Abdul Salam School of Mathematical Sciences, Lahore, Pakistan.
- Participated as **"Invited Speaker"** at "International Pure Mathematics Conference 2023 (IPMC-2023)" on August 26th-28th, 2023, Quaid e Azam University Islamabad.
- Attended the "National Conference on Mathematical Sciences", IIUI, 27th and 28th Apr 2017.
- Attended the "Second Conference on Mathematical Sciences", IIUI, 1st and 2nd Nov 2013.

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