Prof. Dr. IJAZ HUSSAIN

PERSONAL INFORMATION	Father Name: Ghulam Hassan Nationality: Pakistani	Date of Birth: 01-07-1978 Language: Urdu and English
CONTACT INFORMATION	Department of Statistics, Quaid-i-Azam University Islamabad, Pakistan.	*Phone:* 00923008845284 *E-mail:* ijaz@qau.edu.pk ijaz.hussain.kherani@gmail.com

RESEARCH INTERESTS **Spatial Statistics, Bayesian Statistics, Regression Analysis, and Stochastic Processes**

COURSES TAUGHT AT POSTGRADUATE LEVEL **Machine Learning, Exploratory Data Analysis, Advanced Spatial Statistics, Bayesian Statistics, Computational Statistics, Regression Analysis, Probability and Statistics, Research Methods, Estimation, and Testing of Hypothesis**

EDUCATION

University of Klagenfurt, 9020, Klagenfurt, Austria

PhD, Statistics, July, 2010

- Dissertation Topic: "Spatio-temporal Interpolation and Spatial Sampling Design for Precipitation in Pakistan during Monsoon"
- Advisor: Professor Juergen Pilz

National College of Business Administration and Economics, Lahore, Pakistan

M.Phil, Applied Statistics, 2006

- Dissertation Topic: " A Modified t Test Statistic"
- Advisor: Professor Munir Ahmad

Bahauddin Zakariya University, Multan, Pakistan

M.Sc., Statistics, February 2001

Bahauddin Zakariya University, Multan, Pakistan

B.Sc. Mathematics A & B and Statistics, May, 1997

HONORS AND AWARDS

- Won a research project titled"Mapping Physical Disabilities in Humans Population of KPK Province, Pakistan" of 0.804232 million from Higher Education Commission Pakistan as **principle investigator** .
- Won a research project titled"Study of spatial behavior of contamination in pure drinking water for three divisions (DG Khan, Multan and Bahawalpur) in Punjab" of 0.823171 million from Higher Education Commission Pakistan as **Co-principle investigator** .

- Higher Education scholarship for overseas PhD studies, 2007.
- Approved supervisor for PhD by Higher Education Commission Pakistan.
- Won a research project titled"Optimization of Metrological Monitoring Network in Pakistan" of 0.907 million from Higher Education Commission Pakistan.

ACADEMIC
EXPERIENCE

- Chairman Department of Statistics, Quaid-i-Azam University Islamabad from March 22, 2023 to-date.
- Professor (Tenured) of Statistics at Department of Statistics, Quaid-i-Azam University Islamabad since August 29, 2022.
- Chairman Department of Statistics, Quaid-i-Azam University Islamabad from January 25, 2019 to September 25, 2020.
- Tenured Associate Professor of Statistics at Department of Statistics, Quaid-i-Azam University Islamabad from October, 2016 to August 28, 2022.
- Assistant Professor (TTS) of Statistics at Department of Statistics, Quaid-i-Azam University Islamabad, from January, 2013 to October, 2016.
- Assistant Professor of Statistics at COMSATS Institute of Information Technology Lahore from 17th September, 2010 to January, 2013. During this period, I taught Probability and statistics, Introduction to statistics, and statistical inference at graduation level and business mathematics and statistics at postgraduate level.
- Lecturer of Statistics at COMSATS Institute of Information Technology Lahore for August 2005 to January 2008. During this period, I taught Probability and statistics, Introduction to statistics, and statistical inference at graduation level and business mathematics and statistics at postgraduate level.
- Visiting lecturer in University of Management and Technology (ILM Trust) Lahore for September 2003 to August 2005. Taught Probability and statistics, Introduction to statistics, textile statistics, and statistical inference.
- Lecturer in Institute of Business Laureates (IBL) Lahore for January 2002 to May 2003.
- Teacher assistant in applied statistics at Lahore University of Management Sciences (LUMS) for 3 months.
- Lecturer in statistics at Layyah Institute of Commerce and Computer Science (LICCS) for 6 months.

IMPACT FACTOR
JOURNAL
PUBLICATIONS

1. Raza, M. A., Almazah, M. M., Ali, Z., **Hussain, I.**, & Al-Duais, F. S. (2022). Application of Extreme Learning Machine Algorithm for Drought Forecasting. Complexity, 2022.

2. Tehreem, Z., Ali, Z., Al-Ansari, N., Niaz, R., **Hussain, I.**, & Sammen, S. S. (2022). A Novel Appraisal Protocol for Spatiotemporal Patterns of Rainfall by Reconnaissance the Precipitation Concentration Index (PCI) with Global Warming Context. **Mathematical Problems in Engineering**, 2022.

3. Omer, T., Ul Hassan, M., **Hussain, I.**, Ilyas, M., Din Hashmi, S. G. M., & Khan, Y. A. (2022). Optimization of Monitoring Network to the Rainfall Distribution by Using Stochastic Search Algorithms: Lesson from Pakistan. **Tellus. Series A, Dynamic meteorology and oceanography**, 74(2022), 333-345.

4. Niaz, R., Almazah, M. M., Al-Duais, F. S., Iqbal, N., Khan, D. M., & **Hussain, I**. (2022). Spatiotemporal analysis of meteorological drought variability in a homogeneous region using standardized drought indices. *Geomatics, Natural Hazards and Risk*, 13(1), 1457-1481.

5. Niaz, R., Raza, M. A., Almazah, M. M., **Hussain, I**., Al-Rezami, A. Y., & Al-Shamiri, M. M. A. (2022). Proportional odds model for identifying spatial inter-seasonal propagation of meteorological drought. Geomatics, Natural Hazards and Risk, 13(1), 1614-1639.

6. Niaz, R., Tanveer, F., Almazah, M., **Hussain, I.**, Alkhatib, S., & Al-Razami, A. Y. (2022). Characterization of Meteorological Drought Using Monte Carlo Feature Selection and Steady-State Probabilities. **Complexity**, 2022.

7. Niaz, R., Iqbal, N., Al-Ansari, N., **Hussain, I.**, Elashkar, E. E., Soudagar, S. S., ... & Sammen, S. S. (2022). A new spatiotemporal two-stage standardized weighted procedure for regional drought analysis. **PeerJ**, 10, e13249.

8. Niaz, R., Almazah, M. M., **Hussain, I.**, Faisal, M., Al-Rezami, A. Y., & Naser, M. A. (2022). A new comprehensive approach for regional drought monitoring. **PeerJ**, 10, e13377.

9. Wahid, A., Khan, D. M., **Hussain, I.**, Khan, S. A., & Khan, Z. (2022). Unsupervised feature selection with robust data reconstruction (UFS-RDR) and outlier detection. **Expert Systems with Applications**, 201, 117008.

10. Qurban, M., Almazah, M., Nazir, H. M., **Hussain, I.**, Ismail, M., Al-Duais, F. S., ... & Murshed, M. N. (2022). Improvement towards Prediction Accuracy of Principle Mineral Resources Using Threshold. **Mathematical Problems in Engineering**, 2022.

11. Habeeb, R., **Hussain, I.**, Al-Ansari, N., & Sammen, S. S. (2022). A Proposed Comparative Algorithm for Regional Crop Yield Assessment: An Application of Characteristic Objects Method. *Mathematical Problems in Engineering*, 2022.

12. Niaz, R., Almazah, M., **Hussain, I.**, Al-Ansari, N., & Sh Sammen, S. (2022). Assessing the probability of drought severity in a homogeneous region. *Complexity*, 2022.

13. Al-Dousari, A., Ellahi, A., & **Hussain, I.** (2021). Use of non-homogeneous Poisson process for the analysis of new cases, deaths, and recoveries of COVID-19 patients: A case study of Kuwait. Journal of King Saud University-Science, 33(8), 101614.

14. Al-Dousari, A., Qurban, M., **Hussain, I.**, & Al-Hajeri, M. (2021). Development of novel hybrid models for the prediction of COVID-19 in Kuwait. **Kuwait Journal of Science**, Special Issue. 2021,pp(1-6).

15. Niaz, R., Almazah, M., & **Hussain, I.** (2022). A new framework to substantiate the prevalence of drought intensities. *Theoretical and Applied Climatology*, 147(3), 1079-1090.

16. Niaz, R., Zhang, X., Iqbal, N., Almazah, M., Hussain, T., & **Hussain, I.** (2021). Logistic regression analysis for spatial patterns of drought persistence. Complexity, 2021.

17. Niaz, R., Zhang, X., Ali, Z., **Hussain, I.**, Faisal, M., Elashkar, E. E., ... & Al-Deek, F. F. (2021). A new propagation-based framework to enhance competency in regional drought monitoring. *Tellus A: Dynamic Meteorology and Oceanography*, 73(1), 1-12.

18. Niaz, R., **Hussain, I.**, Ali, Z., & Faisal, M. (2021). A novel framework for regional pattern recognition of drought intensities. *Arabian Journal of Geosciences*, 14(16), 1-16.

19. Ali, Z., Ellahi, A., **Hussain, I.**, Nazeer, A., Qamar, S., Ni, G., & Faisal, M. (2021). Reduction of Errors in Hydrological Drought Monitoring–A Novel Statistical Framework for Spatio-Temporal Assessment of Drought. *Water Resources Management*, 1-18.

20. Habeeb, R., Zhang, X., **Hussain, I.**, Hashmi, M. Z., Elashkar, E. E., Khader, J. A., ... & Al-Deek, F. F. (2021). Statistical analysis of modified Hargreaves equation for precise estimation of reference evapotranspiration. *Tellus A: Dynamic Meteorology and Oceanography*, 73(1), 1-12.

21. Rehman, S. U., **Husain, I.**, Hashmi, M. Z., Elashkar, E. E., Khader, J. A., & Ageli, M. (2021). Forecasting and modeling of atmospheric methane concentration. *Arabian Journal of Geosciences*, 14(16), 1-8.

22. Qurban, M., Zhang, X., Nazir, H. M., **Hussain, I.**, Faisal, M., Elashkar, E. E., ... & Al-Deek, F. F. (2021). Development of Hybrid Methods for Prediction of Principal Mineral Resources. *Mathematical Problems in Engineering*, 2021.

23. Ellahi, A., **Hussain, I.**, Hashmi, M. Z., Almazah, M. M. A., & Al-Duais, F. S. (2021). Agricultural drought periods analysis by using nonhomogeneous poisson models and regionalization of appropriate model parameters. *Tellus A: Dynamic Meteorology and Oceanography*, 73(1), 1-15.

24. Shaukat, M. H., Alotaibi, N., **Hussain, I.**, & Shrahili, M. (2021). The Analysis of the Incidence Rate of the COVID-19 Pandemic Based on Segmented Regression for Kuwait and Saudi Arabia. *Mathematical Problems in Engineering*, 2021.

25. Niaz, R., **Hussain, I.**, Zhang, X., Ali, Z., Elashkar, E. E., Khader, J. A., ... & Shoukry, A. M. (2021). Prediction of Drought Severity Using Model-Based Clustering. *Mathematical Problems in Engineering*, 2021.

26. Khan, M. A., Faisal, M., Hashmi, M. Z., Nazeer, A., Ali, Z., & **Hussain, I.** (2021). Modeling drought duration and severity using two-dimensional copula. *Journal of Atmospheric and Solar-Terrestrial Physics*, 214, 105530.

27. Raza, A., **Hussain, I.**, Ali, Z., Faisal, M., Elashkar, E. E., Shoukry, A. M., ... & Gani, S. (2021). A seasonally blended and regionally integrated drought index using Bayesian network theory. *Meteorological Applications*, 28(3), e1992.

28. Saadat, S., **Hussain, I.**, & Faisal, M. (2021). Modeling and forecasting of principal minerals production. *Arabian Journal of Geosciences*, 14(9), 1-16.

29. Khan, S., **Hussain, I.**, & Rahman, A. (2021). Identification of homogeneous rainfall regions in New South Wales, Australia. *Tellus A: Dynamic Meteorology and Oceanography*, 73(1), 1-11.

30. Wahid, A., Khan, D. M., Khan, S. A., **Hussain, I.**, & Khan, Z. (2021). Robust regularization for high-dimensional Cox's regression model using weighted likelihood criterion. *Chemometrics and Intelligent Laboratory Systems*, 213, 104285.

31. Ali, Z., **Hussain, I.**, Nazeer, A., Faisal, M., Ismail, M., Qamar, S., ... & Ni, G. (2020). Measuring and restructuring the risk in forecasting drought classes: an application of weighted Markov chain based model for standardised precipitation evapotranspiration index (SPEI) at one-month time scale. *Tellus A: Dynamic Meteorology and Oceanography*, 72(1), 1-10.

32. Niaz, R., **Hussain, I.**, Ali, Z., Faisal, M., Elashkar, E. E., Shoukry, A. M., ... & Al-Deek, F. F. (2020). A novel spatially weighted accumulative procedure for regional drought monitoring. *Tellus A: Dynamic Meteorology and Oceanography*, 72(1), 1-13.

33. Nazir, H. M., **Hussain, I.**, Faisal, M., Shoukry, A. M., Sharkawy, M. A. W., Al-Deek, F. F., & Ismail, M. (2020). Dependence structure analysis of multisite river inflow data using vine copula-CEEMDAN based hybrid model. *PeerJ*, 8, e10285.

34. Shaukat, M. H., **Hussain, I.**, Faisal, M., Al-Dousari, A., Ismail, M., Shoukry, A. M., ... & Gani, S. (2020). Monthly drought prediction based on ensemble models. *PeerJ*, 8, e9853.

35. Shaukat, M. H., Al-Dousari, A., **Hussain, I.**, Faisal, M., Ismail, M., Shoukry, A. M.,... & Gani, S. (2020). Evaluation of wet and dry event's trend and instability based on the meteorological drought index. *PeerJ*, 8, e9729.

36. Ali, Z., **Hussain, I.**, Faisal, M., Grzegorczyk, M., Qamar, S., Shoukry, A. M., ... & Gani, S. (2020). On the more generalized non-parametric framework for the propagation of uncertainty in drought monitoring. *Meteorological Applications*, 27(3), e1914. I.F (1.84).

37. Atif, M., Devanesan, S., AlSalhi, M. S., Masilamani, V., Saleem, M. N. A., AlShebly, M., ... & Alimgeer, K. S. (2020). An experimental and algorithm-based study of the spectral features of breast cancer patients by a photodiagnosis approach. Photodiagnosis and Photodynamic Therapy, 31 (2020), Article ID: 101851. I.F 2.589

38. Ellahi, A., Almanjahie, I. M., Hussain, T., Hashmi, M. Z., Faisal, S., & **Hussain, I.** (2020). Analysis of agricultural and hydrological drought periods by using non-homogeneous Poisson models: Linear intensity function. Journal of Atmospheric and Solar-Terrestrial Physics, 198, 105190. I.F (1.751)

39. Ali, Z., Almanjahie, I. M., **Hussain, I.**, Ismail, M., & Faisal, M. (2020). A novel generalized combinative procedure for Multi-Scalar standardized drought Indices-The long average weighted joint aggregative criterion. Tellus A: Dynamic Meteorology and Oceanography, 72, Article: 1736248, 1-23. I.F (2.12)

40. Ellahi, A., Almanjahie, I. M., Hussain, T., Hashmi, M. Z., Faisal, S., & **Hussain, I.** (2020). Analysis of agricultural and hydrological drought periods by using non-homogeneous Poisson models: Linear intensity function. Journal of Atmospheric and Solar-Terrestrial Physics, 198, 105190. I.F (1.751)

41. Niaz, R., Almanjahie, I. M., Ali, Z., Faisal, M., & **Hussain, I.** (2020). A Novel Framework for Selecting Informative Meteorological Stations Using Monte Carlo Feature Selection (MCFS) Algorithm. Advances in Meteorology, 2020, Article ID: 5014280, 1-13. I.F (1.29)

42. Muazzam, B., Munawar, K., Khan, I. A., Jahan, S., Iqbal, M., Asi, M. R., ... & Zafar, M. I. (2019). Stress response and toxicity studies on zebrafish exposed to endosulfan and imidacloprid present in water. Journal of Water Supply: Research and Technology—AQUA, 68(8), 718-730. I.F (0.824)

43. Ali, Z., **Hussain, I.**, Faisal, M. et al. Propagation of the Multi-Scalar Aggregative Standardized Precipitation Temperature Index and its Application. Water Resources Manage 34(2020), 699-714. I.F (2.78)

44. Ali, Z., **Hussain, I.**, Faisal, M., Grzegorczyk, M. A., Almanjahie, I. M., Nazeer, A., & Ahmad, I. (2020). Characterization of regional hydrological drought using improved precipitation records under multi-auxiliary information. Theoretical and Applied Climatology,140(2020), 25-36. I.F (2.72)

45. Nazir, H. M., **Hussain, I.**, Faisal, M., Elashkar, E. E., & Shoukry, A. M. (2019). Improving the prediction accuracy of river inflow using two data pre-processing techniques coupled with data-driven model. PeerJ, 7, e8043. I.F (2.35)

46. Bashir, A., Shehzad, M. A., **Hussain, I.**, Rehmani, M. I. A., & Bhatti, S. H. (2019). Reservoir Inflow Prediction by Ensembling Wavelet and Bootstrap Techniques to Multiple Linear Regression Model. Water Resources Management, 33(15), 5121-5136. I.F (2.78)

47. Ali, Z., **Hussain, I.**, Faisal, M., Shad, M. Y., Elashkar, E. E., & Gani, S. (2020). An ensemble procedure for pattern recognition of regional drought. International Journal of Climatology, 40(1), 94-114. I.F (3.609)

48. Nazir, H. M., **Hussain, I.**, Ahmad, I., Faisal, M., & Almanjahie, I. M. (2019). An improved framework to predict river flow time series data. PeerJ, 7, e7183. I.F (2.35)

49. Ali, Z., **Hussain, I.**, Faisal, M., Elashkar, E. E., Gani, S., & Shehzad, M. A. (2019). Selection of appropriate time scale with Boruta algorithm for regional drought monitoring using multi-scaler drought index. Tellus A: Dynamic Meteorology and Oceanography, 71(2019), Article ID: 1604057, 1-16. I.F (2.12)

50. Zahid, F. M., Ramzan, S., Faisal, S., & **Hussain, I.** (2019). Gender based survival prediction models for heart failure patients: A case study in Pakistan. PloS one, 14(2), e0210602. I.F (2.776)

51. Ali, Z., **Hussain, I.**, Faisal, M., Almanjahie, I. M., Ahmad, I., Khan, D. M., ... & Qamar, S. (2019). A Probabilistic Weighted Joint Aggregative Drought Index (PWJADI) criterion for drought monitoring systems. Tellus A: Dynamic Meteorology and Oceanography, 71(2019), Article ID: 1588584, 1-21. I.F (2.0)

52. Muhammad, Y. S., Khan, S., **Hussain, I.**, Shoukry, A. M., Shamsuddin, S., & Gani, S. (2019). Minimum Cost Multiobjective Programming Model for Target Efficiency in Sample Selection. Scientific Programming, 2019, Article ID 7193726, 1-9. I.F (1.286)

53. Ali, Z., **Hussain, I.**, Faisal, M., Shoukry, A. M., Gani, S., & Ahmad, I. (2019). A framework to identify homogeneous drought characterization regions. Theoretical and Applied Climatology, 137(3-4), 3161-3172. I.F (2.72)

54. Nazir, H. M., **Hussain, I.**, Faisal, M., Shoukry, A. M., Gani, S., & Ahmad, I. (2019). Development of Multidecomposition Hybrid Model for Hydrological Time Series Analysis. Complexity, 2019, Article ID: 2782715, 1-14. I.F (2.59)

55. Ali, Z., **Hussain, I.**, Faisal, M., Almanjahie, I. M., Ismail, M., Ahmad, M., & Ahmad, I. (2018). A New Weighting Scheme in Weighted Markov Model for Predicting the Probability of Drought Episodes. Advances in Meteorology, 2018, Article ID: 8954656, 1-10. I.F (1.65)

56. Gul, S., **Hussain, I.**, Shad, M. Y., Faisal, M., Shoukry, A. M., & Adnan, S. (2018). Non-parametric trend analysis of reference evapotranspiration for Khyber Pakhtunkhwa, Pakistan. International Journal of Global Warming, 14(3), 313-329. I.F (0.259)

57. Ali, A., Mannan, A., **Hussain, I.**, Hussain, I., & Zia, M. (2018). Effective removal of metal ions from aquous solution by silver and zinc nanoparticles functionalized cellulose: isotherm, kinetics and statistical supposition of process. Environmental Nanotechnology, Monitoring & Management, 9(2018), 1-11. I.F (3.5)

58. Hussain, A., Muhammad, Y. S., Nauman Sajid, M., **Hussain, I.**, Mohamd Shoukry, A., & Gani, S. (2017). Genetic algorithm for traveling salesman problem with modified cycle crossover operator. Computational intelligence and neuroscience, 2017, Article ID: 7430125, 1-7. I.F (0.295)

59. Wahid, A., Khan, D. M., & **Hussain, I.** (2017). Robust Adaptive Lasso method for parameter's estimation and variable selection in high-dimensional sparse models. PloS one, 12(8), e0183518. I.F (2.806)

60. Ali, Z., **Hussain, I.**, Faisal, M., Nazir, H. M., Abd-el Moemen, M., Hussain, T., & Shamsuddin, S. (2017). A novel multi-scalar drought index for monitoring drought: the standardized precipitation temperature index. Water resources management, 31(15), 4957-4969. I.F (2.64)

61. Ali, Z., **Hussain, I.**, Faisal, M., Nazir, H. M., Hussain, T., Shad, M. Y., ... & Hussain Gani, S. (2017). Forecasting drought using multilayer perceptron artificial neural network model. Advances in Meteorology, 2017, Article ID: 5681308, 1-9. I.F (1.05)

62. Khan, S. A., **Hussain, I.**, Hussain, T., Faisal, M., Muhammad, Y. S., & Mohamd Shoukry, A. (2017). Regional frequency analysis of extremes precipitation using L-moments and partial L-moments. Advances in Meteorology, 2017.Aticle ID: 6954902, 1-20. I.F (1.05)

63. Muhammad, Y. S., **Hussain, I.**, & Shoukry, A. M. (2016). Multivariate Multi-Objective Allocation in Stratified Random Sampling: A Game Theoretic Approach. PloS one, 11(12), e0167705. I.F (3.057)

64. Akhtar, A., **Hussain, I.**, Talha, M., Shakeel, M., Faisal, M., Ameen, M., & Hussain, T. (2016). Prevalence and diagnostic of head and neck cancer in Pakistan. Pak. J. Pharm. Sci, 29(5), 1839-1846. I.F (0.58)

65. Zahid, E., **Hussain, I.**, Spöck, G., Faisal, M., Shabbir, J., AbdEl-Salam, N. M., & Hussain, T. (2016). Spatial Prediction and Optimized Sampling Design for Sodium Concentration in Groundwater. PloS one, 11(9), e0161810. I.F (3.057)

66. Nazir, H. M., **Hussain, I.**, Zafar, M. I., Ali, Z., & AbdEl-Salam, N. M. (2016). Classification of drinking Water Quality Index and identification of significant factors. Water resources management, 30(12), 4233-4246. I.F (2.437)

67. Shakeel, M., ul Haq, M. A., **Hussain, I.**, Abdulhamid, A. M., & Faisal, M. (2016). Comparison of two new robust parameter estimation methods for the power function distribution. PloS one, 11(8), e0160692. I.F (3.057)

68. Faisal, M., Futschik, A., **Hussain, I.**, & Abd-el. Moemen, M. (2016). Choosing summary statistics by least angle regression for approximate Bayesian computation. Journal of Applied Statistics, 43(12), 2191-2202. I.F (0.61)

69. Yousaf Shad, M., & **Hussain, I.** (2017). Trade-off between cost and variance for a multi-objective compromise allocation in stratified random sampling. Communications in Statistics-Theory and Methods, 46(6), 2655-2666. I.F (0.42)

70. Shakeel, M., **Hussain, I.**, Arif, M. M., & Ameen, M. (2015). Parametric modeling of household income distribution in the Punjab, Pakistan. Science International, 27(5), 4161-4170.

71. Mubarak, N., **Hussain, I.**, Faisal, M., Hussain, T., Shad, M. Y., AbdEl-Salam, N. M., & Shabbir, J. (2015). Spatial Distribution of Sulfate Concentration in Groundwater of South-Punjab, Pakistan. Water Quality, Exposure and Health, 7(4), 503-513. I.F (0.92).

72. **Hussain, I.**, Mubarak, N., Shabbir, J., Hussain, T., & Faisal, M. (2015). Spatial interpolation of sulfate concentration in groundwater including covariates using Bayesian hierarchical models. Water Quality, Exposure and Health, 7(3), 339-345. I.F (0.92).

73. **Hussain, I.**, Faisal, M., Shad, M. Y., Hussain, T., & Ahmed, S. (2015). Assessment of spatial models for interpolation of elevation in Pakistan. International Journal of Global Warming, 7(3), 409-422. I.F (0.59).

74. Muhammad, Y. S., Shabbir, J., **Husain, I.**, & Abd-el Moemen, M. (2015). Multi-objective Compromise Allocation in Multivariate Stratified Sampling Using Extended Lexicographic Goal Programming with Gamma Cost Function. Journal of Mathematical Modeling and Algorithms in Operations Research, 14(3), 255-265.

75. **Hussain, I.**, Shakeel, M., Faisal, M., Soomro, Z. A., Hussain, M., & Hussain, T. (2014). Distribution of total dissolved solids in drinking water by means of bayesian kriging and gaussian spatial predictive process. Water Quality, Exposure and Health, 6(4), 177-185. I.F (0.92).

76. Khattak, A., Ahmad, N., **Hussain, I.**, Qazi, M. A., & Khan, S. A. (2014). Spatial distribution of salinity in shallow ground water used for crop irrigation. Pakistan Journal of Botany, 46(2), 531-537.I.F (0.82).

77. Mahmood, H. Z., **Hussain, I.**, Iftikhar, S., Khan, M., & Nisa, F. R. (2014). Role of Livestock in Food Security: An Ascertainment from Punjab Pakistan. International Journal of Academic Research in Business and Social Sciences, 4(8), 458-470.

78. Younas, B., Khan, A. S., Muzaffar, D., **Hussain, I.**, Chaudhry, A. A., & Rehman, I. U. (2013). In situ reaction kinetic analysis of dental restorative materials. *The European Physical Journal-Applied Physics*, 64(3), 30701.

79. Abid, T., Malik, S. N., Hussain, N., Siddique, M., Mahmood, Q., **Hussain, I.**, & Farooq, R. (2013). Electrolyte assisted sono-electrochemical decomposition of reactive red 195. Journal of Chemical Society Pakistan, 35(2), 377. I.F (0.35)

80. Faisal, M., Futschik, A., & **Hussain, I.** (2013). A new approach to choose acceptance cutoff for approximate Bayesian computation. Journal of Applied Statistics, 40(4), 862-869. I.F (0.42).

81. **Hussain, I.**, Kazianka, H., & Faisal, J. P. M. (2013). Spatio-temporal modeling of Particulate Matter Concentrations: including Covariates. Science International, 25(1), 15-21.

82. **Hussain, I.**, Spoeck, G., Pilz, J., Faisal, M., & Yu, H. L. (2012). "Spatio-Temporal Interpolation of precipitation including Covariates: during Monsoon Periods in Pakistan ", Pakistan Journal of Statistics, 28(3), 351-365. I.F (0.30).

83. Spoeck, G., & **Hussain, I.** (2012). Spatial sampling design based on convex design ideas and using external drift variables for a rainfall monitoring network in Pakistan. Statistical Methodology, 9(1), 195-210. I.F (0.708).

84. **Hussain, I.**, Pilz, J., & Spoeck, G. (2011). Homogeneous climate regions in Pakistan. International Journal of Global Warming, 3(1-2), 55-66. I.F (0.59).

85. Hussain, I., Spoeck, G., Pilz, J., & Yu, H. L. (2010). Spatio-temporal interpolation of precipitation during monsoon periods in Pakistan. Advances in water resources, 33(8), 880-886. I.F (2.87)

86. **Hussain, I.**, Pilz, J.,& Spoeck, G. (2010). Hierarchical Bayesian space-time interpolation versus spatio-temporal BME approach. Advances in Geosciences, 25(25), 97-102.

Papers in Non ISI Journals

1. Zahra, A., **Hussain, I.**, Hashmi, M. Z., Faisal, M., Elashkar, E. E., Soudagar, S. S., ... & Ageli, M. (2021). Strauss point modeling for seismic activity: a case study of earthquakes. Modeling Earth Systems and Environment, 1-9.

2. Ali, A., Mannan, A., **Hussain, I**., Hussain, I., & Zia, M. (2018). Effective removal of metal ions from aquous solution by silver and zinc nanoparticles functionalized cellulose: Isotherm, kinetics and statistical supposition of process. *Environmental Nanotechnology, Monitoring & Management*,9, 1-11

3. Shakeel, M., **Hussain, I.**, Arif, M. M., & Ameen, M.(2015) Parametric modeling of household income distribution in the Punjab, Pakistan, 27(5), 4161-4170.

4. Muhammad, Y. S., Shabbir, J., **Husain, I.**, & Abd-el Moemen, M. (2014). Multi-objective Compromise Allocation in Multivariate Stratified Sampling Using Extended Lexicographic Goal Programming with Gamma Cost Function. Journal of Mathematical Modeling and Algorithms in Operations Research, 1-11.

5. Mahmood, H. Z., **Hussain, I.**, Iftikhar, S., Khan, M., & Nisa, F. R. (2014). Role of Livestock in Food Security: An Ascertainment from Punjab Pakistan. International Journal of Academic Research in Business and Social Sciences, 4(8), 458-470.

6. **Hussain, I.**, Kazianka, H., & Faisal, J. P. M. (2013). Spatio-temporal modeling of Particulate Matter Concentrations: including Covariates. Science International, 25(1), 15-21.

7. **Hussain, I.**, Pilz, J., & Spoeck, G. (2010). Hierarchical Bayesian space-time interpolation versus spatio-temporal BME approach. Advances in Geosciences, 25(25), 97-102. `http://www.adv-geosci.net/25/97/2010/adgeo-25-97-2010.pdf`. **SNIP=0.632, SJR=0.269/Q2**

M.Phil Thesis Supervised

1. **Saira Abid** (2017), title:"'Optimization of metrological monitoring network of Pakistan based on various spatial predictors"'. **Current Position:** Data Analyst in a international Organization.

2. **Muhammad Arif** (2017), title:"' Modifications of Weibull distribution and its charactirization"'. **Current Position:** Lecturer in government college.

3. **Syed Muhammad Saeed** (2017), title:"' Spatial temporal interpolation of reference evapotranspiration for Pakistan"'. **Current Position:** Lecturer in government college.

4. **Muhammad Anus Hayat Khan** (2017), title:"' Analysis of road traffic Accidents in the Punjab by using different statistics techniques"'. **Current Position:** Visiting Lecturer in government college.

5. **Abdullah Iqbal** (2017), title:"' Spatial analysis of water quality index by using different Geo-statistical techniques"'. **Current Position:** Lecturer in Private College.

6. **Farman Ali** (2017), title:"' Analyzing the drought events using univariate and multivariate drought indices for Punjab, Pakistan"'. **Current Position:** PhD Scholar in China.

7. **Saana Bibi** (2016), title: "'Improving maternal health care for the women's of the district Jhang and Khanewal, Punjab"'. **Current Position:** Assistant Director Bio-Statistics in medical college.

8. **Muhammad Asif Khan** (2016), title: "' Fitting drought duration and severity using two-dimensional Copula for Punjab, Pakistan "'. **Current Position:** PhD Scholar in China.

9. **Anam Amjad** (2016), title: "' One dimensional continuous lag Markov Chain model for prediction and spatial analysis of aridity index "'. **Current Position:** Data Analyst in a international Organization.

10. **Amna Naeem** (2016), title: "' Statistical models for predicting Sulfate concentration in drinking water, Punjab, Pakistan "'. **Current Position:** Internship in government organization.

11. **Rabia Hussain** (2016), title: "'Statistical methods for analyzing quality Of Bottled water in Pakistan"'. . **Current Position:** Data Analyst in a government organization.

12. **Talha Omer** (2015), title "'Optimization of Meteorological Monitoring Network in Pakistan"'. **Current Position:** Lecturer in government university.

13. **Irfan Ullah Jan** (2015), title "'Modeling and Analysis of Spatio-temporal Variation of Reference Evapotranspiration for KPK"'. **Current Position:** Data Analyst in a government organization.

14. **Said Arab Khan** (2015), title "'Regional Frequency Analysis of Extreme Precipitation in Northern Areas and KPK"'. **Current Position:** Lecturer in government college.

15. **Hafiza Mamoona Nazir** (2015), title "Water Quality Assessment of Pipelines by using Different Classification Algorithms"'. **Current Position:** PhD Scholar under my supervision.

16. **Hummaira Mazhar** (2015), title "'Spatial distribution of groundwater quality index in three divisions of Punjab, Pakistan"'. **Current Position:** Assistant Director, State bank of Pakistan.

17. **Haider Ali** (2015), title "'Comparison of spatial and non-spatial regression models for sulfate concentration in groundwater"'. **Current Position:** Assistant Director, State bank of Pakistan.

18. **Shahnshah Hussain** (2014), title "'Hierarchical Bayesian spatio-temporal modeling of precipitation in KPK, Pakistan"'. . **Current Position:** Data Analyst in a government organization.

19. **Zulifqar Ali** (2014), title "'Analyzing spatio-temporal variability in droughts for Northern areas and KPK"'. **Current Position:** PhD Scholar under my supervision.

20. **Naima Mubarak** (2014), title "' Spatial Analysis of Sulfate Concentration in Groundwater"'. **Current Position:** Lecturer in government college.

21. **Erum Zahid** (2014), title "'Spatial Interpolation and Optimized Sampling Design of Sodium Concentration in Drinking Water"'. **Current Position:** PhD Scholar in our department.

SUCCESSFULLY SUPERVISED PHD THESIS

1. Zulfiqar Ali (2019), title "'Propagation of Different Stochastic Frameworks for Modeling,Forecasting and Spatial Analysis of Drought Hazard"'

2. Hafiza Maimoona Nazir (2020), title "'Integrating Novel Hybrid Approaches to Handle Complex Hydrological Time Series Data: A Case Study on Rivers Inflow in Indus Basin System"

PHD THESIS SUPERVISION IN PROGRESS

1. **Ahmad Raza**, since September, 2017.

2. **Muhammad Rizwan Niaz** since January, 2018.

3. **Ramsha Habib**, since September, 2019.

4. **Asad Ellahi**, since February, 2020

5. **Muhammad Irfan**, since February, 2020.

CONFERENCE PRESENTATIONS

1. **I. Hussain**, M. Mohsin, G.Spoeck and J. Pilz, Hirarchical Bayesian Spatio-Temporal Interpolation including Covariates, Geophysical Research Abstracts, Vol. 12, EGU2010-9294, 2010, http://meetingorganizer.copernicus.org/EGU2010/EGU2010-9294.pdf

2. **I. Hussain**, and J. Pilz, "Hierarchical Bayesian Interpolation for Precipitation in Pakistan", *Proceeding StatGIS, editor J. Pilz*, 2009. http://www.math.uni-klu.ac.at/stat/Tagungen/statgis/2009/StatGIS2009_Hussain_1.pdf

3. M.S.Khan, M.S.Awan,E.Leitgeb, F.Nadeem and **I. Hussain**, " Selecting a Distribution Function for optical attenuation in dense continental fog conditions", *IEEE 5th International Conference on Emerging Technologies ICET*, 2009 http://ieeeicet.org/2009/ICET2009_Program.pdf.

4. **I. Hussain** and J. Pilz, Spatio-Temporal Clustering of Monitoring Network, Geophysical Research Abstracts, Vol, 11, EGU2009-8740-4, 2009, `http://meetingorganizer.copernicus.org/EGU2009/EGU2009-8740-4.pdf`

5. **I. Hussain** and Munir Ahmad, "An Upper Tailed Testing Procedure for Testing the Mean of Positively Skewed Distributions", *All Pakistan mathematical conference*, 2007.

Computer Skills
- Statistical Softwares: SPSS, STATA and MINITAB
- Statistical Programing: R-GUI, S-Plus and MATLAB
- Algorithms: Experience programming Markov Chain Monte Carlo simulations of Bayesian posterior distributions
- Windows (2000, XP), Window 7, Vista and Linux