

# IJAZ HUSSAIN

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## 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.

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## RESEARCH INTERESTS

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

## COURSES TAUGHT AT POSTGRADUATE LEVEL

**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 since January, 2019.
- Tenured Associate Professor of Statistics at Department of Statistics, Quaid-i-Azam University Islamabad since October, 2016.
- 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. 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.
2. 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, 1-12.
3. 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.
4. 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.
5. 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.
6. Ali, Z., **Hussain, I.**, Muhammad Faisal, M., Almanjahie, I. M., Ismail, M., Ahmad, M., and Ahmad, I. "A New Weighting Scheme in Weighted Markov Model for Predicting the Probability of Drought Episodes," Advances in Meteorology, vol. 2018, Article ID 8954656, 10 pages, 2018. <https://doi.org/10.1155/2018/8954656>.
7. 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.
8. Hussain, A., Muhammad, Y. S., Sajid, M. N., & **Hussain, I.** Genetic Algorithm for Traveling Salesman Problem with Modified Cycle Crossover Operator, Computational Intelligence and Neuroscience, ID; 7430125, 7 pages.

9. 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.
10. 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*, ID 5681308, pages 9.
11. 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*, Article ID 6954902, pages 20, <https://doi.org/10.1155/2017/6954902>
12. 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.
13. Akhtar, A., **Hussain, I.**, Faisal, M., Shakeel, M., Ameen, M., Uppal, M. T. N., & Tajammal Hussain, T. (2016). Prevalence of Head and Neck Cancer in Pakistan, *Pakistan Journal of Pharmaceutical Sciences*, 29(5)(suppl), 1839-1846.
14. 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.
15. 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.
16. 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.
17. Shad, M. Y., & **Hussain, I.** (2015). Tradeoff between cost and variance for a multi-objective compromise allocation in stratified random sampling, *Communications in Statistics-Theory and Methods*, DOI:10.1080/03610926.2015.1040507
18. Faisal, M., Andreas, F., **Hussain, I.**, & Ab-del Moemen, M., (2015). Choosing Summary Statistics by Least Anlge Regression for Approximate Bayesian Computation, *Journal of Applied Statistics*, 43(12), 2191-2202.
19. 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.
20. **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.
21. **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.
22. **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.
23. 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.
24. 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), :377-384.

25. 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.
26. **Hussain, I.**, Spöck, 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.
27. Spöck, 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.
28. **Hussain, I.**, Pilz, J., & Spoeck, G. (2011). Homogeneous climate regions in Pakistan. *International Journal of Global Warming*, 3(1-2), 55-66.
29. **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.

PAPERS IN NON ISI  
JOURNALS

1. Ali, A., Mannan, A., **Hussain, I.**, Hussain, I., Zia, M. (2018). Effective removal of metal ions from aqueous solution by silver and zinc nanoparticles functionalized cellulose: Isotherm, kinetics and statistical supposition of process. *Environmental Nanotechnology, Monitoring Management*,9, 1-11
2. Shakeel, M., **Hussain, I.**, Arif, M. M., & Ameen, M.(2015) Parametric modeling of household income distribution in the Punjab, Pakistan, 27(5), 4161-4170.
3. 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.
4. 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.
5. **Hussain, I.**, Kazianka, H., & Faisal, J. P. M. (2013). Spatio-temporal modeling of Particulate Matter Concentrations: including Covariates. *Science International*, 25(1), 15-21.
6. **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 evapo-transpiration 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 Mamoon 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. **Shahshah 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.

PHD THESIS  
SUPERVISION IN  
PROGRESS

1. **Muhammad Rizwan Niaz** since January, 2018.
2. **Zakia Batool**, since September, 2017.
3. **Zulifqar Ali**, since September, 2015.
4. **Hafiza Mamona Nazir**, since September, 2015.

CONFERENCE  
PRESENTATIONS

1. **I. Hussain**, M. Mohsin, G.Spoeck and J. Pilz, Hierarchical 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](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://ieeeticet.org/2009/ICET2009\\_Program.pdf](http://ieeeticet.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 and MINITAB
- Statistical Programing: R, S-Plus and MATLAB
- Algorithms: Experience programming Markov Chain Monte Carlo simulations of Bayesian posterior distributions
- Windows (2000, XP), Window 7, Vista and Linux