MOHAMMED SHAKHATREH

Curriculum Vitae (May 27, 2024)

Department of Mathematics & Statistics
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Education

2008 Ph.D. in Statistics, University of Toronto, Canada
Thesis Title: *Optimality and Asymptotics for Some Bayesian Inferences*
Supervisor: Evans, Mike
1996 M.Sc. in Statistics, Yarmouk University, Jordan
1993 B.Sc. in Statistics, Yarmouk University, Jordan

Employments

Jan.2020 -	Associate Professor, Department of Mathematics & Statistics Jordan University of Science and Technology.
Feb.2012 -Jan. 2020	Assistant Professor, Department of Mathematics & Statistics Jordan University of Science and Technology.
Sep.2009 - Jan.2012	Full-time Lecturer, Department of Statistics, Yarmouk University.
Jan.2009 - May.2009	Lecturer, Department of Statistics, University of Toronto.
Jan.2008 - June.2008	Statistical Consultant,Addiction and Mental Health Center (CAHM).

Research Interests

- Bayesian inferences
- Reliability & Survival Analysis
- Applied stochastic modelling
- Functional data analysis

Publications

Published papers:

1. Dong, G., **Shakhatreh, M.K.**, and He, D. (2024). "Bayesian analysis of Shannon entropy of the Lomax distribution using non-informative priros." *Journal of Statistical Computation and Simulation*, 94(6), 1317-1338.
2. **Shakhatreh, M.K.** and Aljarrah, M. A. (2023). "Bayesian analysis of unit log-logistic distribution using non-informative priors", *Mathematics.*

3. Dey, S., **Shakhatreh, M.K.**, Singh,K., Mahto, A.K., Tripathi, Y. (2023). "Classical and Bayesian Estimation for 2-Component Mixture of Generalized Rayleigh Distribution based on Type–I Censored Samples," *Electronic Journal of Applied Statistical Analysis* ,16, 654-693.
4. **Shakhatreh, M.K.**, Dey, S., and Devender, K. (2022). "Inverse Lindley power series distributions: A new compounding family and regression model with censored data, " *Journal of Applied Statistics,* 49, 3451-3476.
5. El-Morshedy, Aljohani, Eliwa, Nassar, **Shakhatreh, M.K.** and Afify. (2021). "The Exponentiated BurrHatke Distribution and Its Discrete Version: Reliability Properties with CSALT Model, Inference and Applications," *Mathematics 2021, 9(18), 2277* .
6. **Shakhatreh, M.K.**, Dey, S. and Alodat (2021). " Objective Bayesian analysis of the Shannon entropy of the Weibull distribution." *Applied Mathematical Modelling,* 89, 314-332.
7. **Shakhatreh, M.K.**, A. J. Lemonte, and Gauss M. Cordeiro (2020). "On the generalized extended exponential-Weibull distribution: properties and different methods of estimation," *International Journal of Computer Mathematics,* 97, 1029-1057.
8. Alodat and **Shakhatreh, M.K.** (2020). "Gaussian Process Regression With Skewed Errors." *Journal of Computational and Applied Mathematics,* 370, 15, 2020
9. Al-Babtain, Abdulhakim A. , **Shakhatreh, M.K.**, Mazen Nassar, and Afify, A.Z. (2020). "A New Modified Kies Family: Properties, Estimation Under Complete and Type–II Censored Samples, and Engineering Applications," *Mathematics* 8, 1345; doi:10.3390/math8081345.
10. Nassar, M., Afify, A.Z., **Shakhatreh, M.K.**, Dey, S. (2020). "On A New Extension of Weibull Distribution: Properties, Estimation and Applications to One and Two Causes of Failures," *Quality and Reliability Engineering International,* 36, 2019-2043.
11. **Shakhatreh, M.K.** and A. Al-masri (2020). "On The Weighted BurrXII Distribution: Theory and Practice," *Electronic Journal of Applied Statistical Analysis,* 13, 229 - 255.
12. Nassar, M., Afify, A.Z., **Shakhatreh, M.K.** (2020). "Estimation Methods of Alpha Power Exponential Distribution with Applications to Engineering and Medical Data," *Pakistan Journal of Statistics and Operation Research,* 16(1):149-166.
13. **Shakhatreh, M.K.**, A. J. Lemonte, and G. MorenoArenasc(2019). "The log-normal modified Weibull distribution and its reliability implications." *Reliability Engineering and System Safety*, Vol 88, 6-22.
14. **Shakhatreh MK** (2018). " A New Three - Parameter Extension of the Log-Logistic Distribution with Application to Survival Data." *Communications in Statistics - Theory and Methods,*,Vol 47, 5205-5226
15. Rababah, A.M., Khalid B.M.,**Shakhatreh M.K.** (2017). "Quadratic spline interpolation with minimized error." *AIP Conference Proceedings:International Conference of Numerical Analysis and Applied Mathematics.* Volume 1863 (1)
16. Alzghoul MM, **Shakhatreh, M.K.**, Al-Sheyab N (2017). "Unintentional injuries and violence among adults in northern Jordan: a hospital-based retrospective

study."*International journal of environmental research and public health,* Volume 14(4), 343.

17. **Shakhatreh et. al** (2016). "The beta generalized linear exponential distribution." *Statistics: A Journal of Theoretical and Applied Statistics,* Volume 50(6), pp. 1346-1362, 2016
18. Evans, M.,**Shakhatreh** (2014). "Consistency of Bayesian estimates for the sum of squared normal means with a normal prior." *Sankhya A,* Volume 76-A, Part 1, pp. 25-47, 2014
19. **Shakhatreh, M. K.** (2012). "A two-parameter of weighted exponential distributions." *Statistics and Probability Letters,*Vol. 82, P. 252- 261
20. Eidous, O.,**Shakhatreh, M.K.** (2012). "Double Kernel Method Using Line Transect Sampling." *Austrian Journal of Statistics,*Vol. 41, P. 95- 103
21. Eidous, O., and **Shakhatreh, M.** (2011). " Asymptotic unbiased estimator using line transect sampling." *Communication in Statistics - Theory and methods.* Vol 40, p. 4353-4363
22. Evans, M., and **Shakhatreh, M.** (2008)" Some optimal properties of Bayesian inferences" *Electronic Journal of Statistics*, Vol. 2, 2008, p.1268-1280.

Masters Thesis

Supervisions:

I supervised/co-supervised the following thesis masters at Jordan University of Science & Tech.

- A new mixed class of size-biased Burr XII distribution, 2016
- A compound family of the extended generalized linear exponential distribution and power series distribution, 2016
- Modified generalized linear exponential distribution, 2016
- A compound class of log-logistic and Poisson distributions with application to right censored data , 2014
- A mixed Burr XII and zero-truncated Poisson Distribution: model, properties and application , 2014
- The generalized size- biased weighted exponential distribution , 2014
- The beta generalized linear exponential distribution, 2014
- New bidirectional wave solutions with different physical structures to the complex coupled Higgs model via recent solitary-wave methods, 2022
- Geometric residual power series method to solve geometric integro differential equations, 2021
- Geometric Lebesgue integral and its consequences, 2022

External examiner:

I played as an external examiner for the following theses

- Polynomial Kernel Estimator Using Line Transect Sampling
- A Calibration Approach for Estimating Variance in Survey Sampling.
- Fitting Measurement Error Models with Non Normal Distribution of Errors Using Method of Moments.

Conferences & Selected Talks

2023 The Third Jordanian Conference on Statistics and Its Applications - Statistics and Society: I was a member of the scientific committee

2007 "Some Results Concerning Bayesian inferences ", *Special Statistics Seminar, Department of Mathematics and Statistics, Queens University at Kingston, Ontario, Canada*

2007 "Consistency of Bayesian Estimates for the Sum of Squared Normal Means with a Normal Prior ", *Southern Ontario Statistics Graduate Student Seminar Day, Field of Institute, Toronto*

Members of committees

1. **College committees**:
   - A member of the committee tasked with standardizing the Biostatistics course across various departments within the university

   A representative of the Mathematics and Statistics Dept in the college council for the academic year 2021/2022
   - Member of the Committee for the Investigation of Students Issues
2. **Department committees**
   - Curriculum committee
   - Social Committee
   - Research Committee
   - Graduate studies Committee
   - Promotion Committee

Teaching Experience

Currently, I am teaching the following courses at Jordan University of Science & Technology:

MATH 731 - Graduate Course in Probability

MATH 230 - Probability Theory

MATH 233 - Probability & Statistics for computer sciences

At Jordan University of Science & Tech.

a) Graduate Courses

MATH 793 - Advanced topics in Statistics: Stochastic Calculus

MATH 731 - Advanced course in probability - I

MATH 732 - Mathematical Statistics

b) Under Graduate Courses

MATH 230 - Probability Theory

MATH 330 - Mathematical Statistics I
MATH 331 - Statistical Methods I
MATH 235 - Probability & Statistics for Engineering
MATH 233 - Probability for computer Science
MATH 131 - Elements of Statistics
MATH 99 - PreCalculus
MATH 10l - Calculus - I
MATH 495 - Topics in Statistics and Probability: Multivariate Statistics

At Yarmouk University: I taught the following courses

a) Graduate Courses:

STAT 611 - Graduate course in probability - I
STAT 632 - Mathematical Statistics - II

b) Undergraduate Courses:

STAT 101 - Introduction to Statistics I
STAT 111 - Introduction to Probability I
STAT 211 - Introduction to Probability II
STAT 234 - Introduction to Mathematical Statistics I
STAT 463 - Multivariate Statistics

At University of Toronto

I taught the following courses at the University of Toronto

STA437HS - Applied Multivariate statistics (4^{th} year undergraduate level), Winter, 2009:

STA218HS - Statistics for Management and Economics (2nd Year undergraduate level), Winter 2009

STA250HS - Statistical Concept, summer,2002

Workshops

- Irbid, Jordan, Jordan, 2021, University of Science and Tech., *"Building and populating a website using MS sharepoint"*
- Irbid, Jordan, Jordan, 2021, University of Science and Tech., *"Basics of Distance Education"*
- Irbid, Jordan, Jordan, 2017, University of Science and Tech., *"Development of Curriculum and Study plans"*
- Irbid, Jordan, Jordan, 2016, University of Science and Tech., *" Modern University Instructional Methods"*
- Vancouver, Canada, 2008, University of British Colombia, *"Summer school on Bayesian modeling and computation"*

- Toronto, Canada, 2007, SAS Canada, *"Workshop on longitudinal data analysis in business- and bio- Statistics"*
- Nicosia, Cyprus,1998, The UK Institute of Actuaries, *"Summer school in actuarial science"*

Statistical Consulting Experience

Fall 2017 - Present. Statistical Consulting Laboratory: I am a core member of this lab and I am on the advisory Board of this center as well.

Jan/2008 - June/2008 Statistical Consultant,Addiction and Mental Health Center (CAHM). I worked as statistical consultant for the CAMH. I was involved in performing various complex statistical analysis in a study for evaluating the clinical and cost effectiveness of dialectical behavior therapy (DBT) for people who have borderline personality disorder. I have provided the following statistical consultations:

- Provided statistical analysis for count data (self-harm, emergency visits, psych admission days and psych emergency visits) by using generalized estimating equations (GEE), which is an extended to the generalized linear models to analyze longitudinal data.
- Provided statistical analysis for selecting the best model for the data.
- Created plots to demonstrate linear growth curve analysis.
- Provided statistical survival analyzes.

2006 - Sept.2007 Statistical Consultant, Department of Statistics, University of Toronto
I was involved in the following projects:

- A comparison of public health violations between restaurant chains (analysis used as basis of CBC news show)
- Analysis of the effect of three doses on various nutritional outcomes (within subject design).
- Met and assisted nursing students with experimental design and data analysis.

1996 - 1999 Statistical Consultant, Social Security Corporations(SSC). Amman, Jordan
I was a core member of the fourth actuarial study conducted for (SSC)

- Prepared and analyzed data and information needed for the demographic studies through forecasting and projections techniques
- Prepared and analyzed of data and information to the investment department
- Used statistical tools such as regression analysis, analysis of variance, principle component and factor analysis, time series methodology

Technical Skills

Since 2008, I have been active in integrating technology in the teaching and learning of Statistics. I have excellent knowledge of the following

- Advanced user of R (S-Plus)
- Familiar with SAS, Mintab, SPSS
- Good knowledge of Winbugs, Mathematica, Matlab and Python

Selected Awards

2001 - 2007	Fellowship University of Toronto, Toronto,ON
2002 - 2003	Ontario Graduate Scholarship (OGS) Toronto, ON
2003 - 2004	Ontario Graduate Scholarship (OGS) Toronto, ON

Other Professional Activity

I have refereed papers for the following journals:

1 IEEE Transactions on Information Theory

2 Journal of Computational and Applied Mathematics

3 Reliability Engineering and System Safety

4 Computers & Industrial Engineering

5 Communications in Statistics - Simulation and Computation

6 Probability in the Engineering and Informational Sciences

7 Jordan Journal of Mathematics and Statistics

8 Mathematics

9 Revista Colombiana de Estadstica

10 Neuroscience Informatics

11 Proceedings of the Institution of Mechanical Engineers, Part O: Journal of Risk and Reliability

12 Journal of Statistical Computation and Simulation

13 Symmetry

14 Fractal and Fractional

15 AppliedMath

16 Bulletin of the Malaysian Mathematical Sciences Society

17 CMES-Computer Modeling in Engineering & Sciences

18 Scientific Reports

19 AIMS