

Gayan Warahena Liyanage

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Education

Ph.D. - Statistics and Analytics Central Michigan University, Mt.Pleasant, MI, USA Dissertation Title: A Generalization of LASSO Modeling using Bayesian Approach Advisors: Prof. Carl Lee and Prof. Felix Famoye	2015 - 2021
M.Sc. - Applied Mathematics Indiana University of Pennsylvania, Indiana, PA, USA Thesis Title: The Lindley Power Series Class of Distributions: Model, Properties and Applications Advisor: Prof. Mavis Pararai	2013 - 2015
B.Sc. (Honors), First Class - Statistics and Operations Research University of Peradeniya, Peradeniya Sri Lanka	2007 - 2011

Work Experience

Assistant Professor Department of Mathematics, University of Dayton	2021 - Present
Research Assistant Department of Statistics, Actuarial and Data Sciences, Central Michigan University	Spring 2021
Teaching Instructor Department of Statistics, Actuarial and Data Sciences, Central Michigan University	2018 - 2020
Doctoral Statistical Consulting Assistant Statistical Consulting Center, Central Michigan University	2015 - 2018
Graduate Statistical Consultant Applied Research Lab, Indiana University of Pennsylvania	2013 - 2015
Temporary Lecturer Department of Mathematics, Faculty of Science, University of Peradeniya	2012
Industrial Trainee MAS Holdings, Sri Lanka	2010

Scholarships/Honors

- University prize for Academic Excellence for B.Sc. in Statistics and Operations Research 2011, University of Peradeniya, Sri Lanka.
 - 2007 – 2011 Mahapola Scholarship for undergraduate studies, University of Peradeniya, Sri Lanka.
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Teaching Experience

Teaching Experience at University of Dayton.....

- **MTH 477 Honors Thesis Project** FA 25, SP 26
The course leads to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor.
 - In fall 25 and spring 26, Constructing an Extreme Value Model to Predict Municipal Financial Risk Based on Corporate Bankruptcy by Megan Coyne.

- **MTH 480 Mathematics Capstone** FA24, SP24, FA23, SP23
This course fulfills the major capstone component of the CAP for majors.
Capstone projects under my supervision
 - In fall 26, Classification of Garment Worker Productivity using Operational and Workforce Characteristics by Andrew Jones.
 - In spring 25, Predicting the Home Field Advantage in the NFL by Samuel Limbert.
 - In spring 25, Numbers Don't Lie: Forecasting the NBA Champion with Machine Learning by Jonah Mergler.
 - In fall 24, How MLB's New Rules Have Impacted the Game by Margot Houser.
 - In spring 24, Gamma Exponentiated Burr XII Distribution and its Applications by Hannah Wabel.
 - In fall 23, Beta-Chen Distribution and its Applications by Evan Smyjunas.
 - In spring 23, Exponentiated Kumaraswamy-Burr Distribution and its Applications by Alexander Griffiths.

- **MTH 412 Probability & Statistics II** SP 26
MTH 412 is a required course for students pursuing the BS in Applied Economical Mathematics or the BS in Statistics. It serves as a continuation of MTH 411 and provides a rigorous introduction to bivariate distributions of random variables, transformations of random variables, sampling distributions, and methods of statistical inference, including estimation and hypothesis testing.

- **MTH 367 Statistical Methods I** FA 25
MTH 367 is an applied statistical course for students who are not math majors. The course introduces statistical methods with less emphasis on formulas and calculations and more on their application. As part of the course, students have the opportunity to work on projects and use statistical software. Math majors enroll in MTH 411 instead of MTH 367.

- **MTH 209 Data Manipulation and Management** SP 25, FA 24, SP 24
MTH 209 is a course in the data analytics minor. The main objective of this course is to demonstrate knowledge of technical terms, methods, programming skills, and tools for data manipulation, data management, statistical computing, and data visualization.

- **MTH 369 and MTH 543 as a combined course** FA 24, FA 23
 - MTH 369 Regression for Data Analytics
 - MTH 543 Linear ModelsMTH 369 is a course in the data analytics minor. MTH 543 is a course in the MS in Applied Mathematics program. Both courses provide a comprehensive understanding of different regression analysis methods and hands-on experience with statistical software to analyze real data.

- **MTH 208 Exploratory Data Analysis (EDA)** SP 23
MTH 208 is a new course under the data analytics minor that was offered for the first time in spring 2023. This course provides an introduction to essential data exploration skills within the context of data analytics.

- **MTH 207 Introduction to Statistics** SP 26, FA 25, SP 25, FA 24, SP 24, FA 23, SP 23, FA 22, SP 22, FA 21

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MTH 207 is a CAP mathematics course aimed at non-science and engineering technology majors. This course provides an introduction to basic statistical concepts with less emphasis on formulas and calculations and a greater emphasis on their application.

- MTH 411 Probability & Statistics I FA 22
MTH 411 is a required course for students pursuing the BA in Mathematics or the BS in Applied Econo-
mics or the BS in Statistics, as well as preservice high school teachers with a concentration in integrated
mathematics. It is also an elective for students pursuing the BS in Mathematics.

Teaching Experience at Central Michigan University.....

Courses: STA 282QR Introduction to Statistics Fall 2020, Spring 2020, Fall 2019
MTH 105 Intermediate Algebra Spring 2019, Fall 2018
STA 382QR Elementary Statistical Analysis Spring 2019

Teaching Experience at University of Peradeniya.....

Courses: MT 121 Mathematics for Art/Commerce Students I 2012
MT 315 Operations Research III 2012

Professional Teaching Development Experience

- Participated in Training Sessions Organized by Center for Online Learning at University of Dayton
 - Canvas Assessment Building Mar 14, 2024
 - Canvas Essentials (Introductory training session) Jan 24, 2024
 - **Advancing Teaching & Learning Scholars (ATLS) Core Program - Completed**
 - Core Session 8: Why Do We Teach? Apr 03, 2024
 - Core Session 4: Driving Student Success Mar 13, 2024
 - Core Session 6: How Do You Know If Students Are Learning? Feb 28, 2024
 - Core Session 3: Using Educational Technologies at UD to Support Learning Feb 21, 2024
 - Core Session 1: Who are Our Students? Sep 28, 2023
 - Core Session 5: Engaging Students in a Learner-Centered Classroom Sep 19, 2023
 - Core Session 7: Inclusive Pedagogy Mar 09, 2023
 - Core Session 2: Supporting Students In and Beyond the Classroom Feb 23, 2023
 - Gradescope New User Training May 10, 2022
 - Evaluate Before You Duplicate Dec 07, 2021
 - Creating Graphics to Enhance Your Teaching Nov 18, 2021
- Teaching Internship Spring 2019
Department of Statistics, Actuarial and Data Sciences, Central Michigan University
Course: STA 382QR Elementary Statistical Analysis
Supervisor: Prof. Felix Famoye
- Courses on Mathematics Education
Department of Mathematics, Central Michigan University
 - MTH 762 A Survey of Research in Collegiate Mathematics Education Spring 2018
 - MTH 761 Methods for Teaching College Mathematics Fall 2017

Certifications

- SAS Certified BASE Programmer for SAS 9 2016
- SAS Certified Predictive Modeler Using SAS Enterprise Miner 13 2016

Research Interests

- Statistical distributions and modeling
 - Statistical machine learning
 - Data visualization
 - Mathematics education
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Research Publications

Published/Accepted Refereed Journal Articles since appointment at University of Dayton.....

- Oluyede, B., & Warahena-Liyanage, G. (2026). A New Gamma Odd Lindley Generalized-G Family of Distributions with Applications, *Thailand Statistician*, 24(2), 402-428. Retrieved from <https://ph02.tci-thaijo.org/index.php/thaistat/article/view/264625>
- Warahena-Liyanage, G., Oluyede, B. & Moakofi, T. (2025). The New Ristić-Balakrishnan-Heavy-Tailed-Type II Topp-Leone-G Family of Distributions with Applications. *Journal of Statistical Theory and Applications*, Springer Nature, 24, 354–393. <https://doi.org/10.1007/s44199-025-00113-2>
- Moakofi, T., Puoetsile, A., Oluyede, B., & Warahena-Liyanage, G. (2024). A New Generalized Family of Weibull-Exponentiated Half Logistic-G Distribution with Applications, *Central European Journal of Economic Modelling and Econometrics*, 16(2), 125-189. <https://doi.org/10.24425/cejeme.2024.152688>
- Oluyede, B., Gabanakgosi, M., & Warahena-Liyanage, G. (2024). The Marshall-Olkin-Topp-Leone-Gompertz-G Family of Distributions with Applications. *Statistics, Optimization & Information Computing*, 12(4), 882-906. <https://doi.org/10.19139/soic-2310-5070-1509>
- Warahena Liyanage, G., Gabanakgosi, M., & Oluyede, B. (2023). Generalized Topp-Leone-G power series class of distributions: properties and applications. *Electronic Journal of Applied Statistical Analysis*, 16(3), 564-583. <https://doi.org/10.1285/i20705948v16n3p564>
- Warahena-Liyanage, G.; Oluyede, B.; Moakofi, T.; Sengweni, W. (2023). The New Exponentiated Half Logistic-Harris-G Family of Distributions with Actuarial Measures and Applications. *Stats*, 6, 773–801. <https://doi.org/10.3390/stats6030050>
- Warahena-Liyanage, G., Famoye, F., & Lee, C. (2023). A Generalization of LASSO Modeling via Bayesian Interpretation. *Austrian Journal of Statistics*, 52(4), 15–45. <https://doi.org/10.17713/ajs.v52i4.1455>
- Oluyede, B., & Warahena-Liyanage, G. (2023). The Gamma Odd Weibull Generalized-G Family of Distributions: Properties and Applications. *Revista Colombiana de Estadística (Colombian Journal of Statistics)*, 46(1), 1-44. <https://revistas.unal.edu.co/index.php/estad/article/view/100483>
- Wijetunge, T. M. K., Premadasa, K., Warahena-Liyanage, G., Collins, B., Appuhamy, A., & Ratnayake, J. K. (2022). A Tale of Two Continents: Factors Influencing Students to Major in Mathematics. *Journal of Higher Education Theory and Practice*, 22(14). <https://doi.org/10.33423/jhetp.v22i14.5534>

Published Refereed Journal Articles prior to the appointment at University of Dayton.....

- Wijetunge, T. M., Spann, A. G., Warahena-Liyanage, G., & St John, D. (2020). Significance of the Length of Instructions with Technology: What Pre-Service Teachers Say?. *Journal of Educational Technology*, 17(1), 22-34. <https://doi.org/10.26634/jet.17.1.17085>
- Pararai, M., Warahena-Liyanage, G., & Oluyede, B. O. (2017). Exponentiated power Lindley–Poisson distribution: Properties and applications. *Communications in Statistics-Theory and Methods*, 46(10), 4726-4755. <https://doi.org/10.1080/03610926.2015.1076473>
- Oluyede, B., Foya, S., Warahena-Liyanage, G., & Huang, S. (2016). The log-logistic Weibull distribution with applications to lifetime data. *Austrian Journal of Statistics*, 45(3), 43-69. <https://doi.org/10.17713/ajs.v45i3.107>

- Oluyede, B. O., Warahena-Liyana, G., & Pararai, M. (2016). The Beta Lindley-Poisson Distribution with Applications. *Journal of Statistical and Econometric Methods*, 5(4), 1. Retrieved from <http://www.ss-pub.org/wp-content/uploads/2015/12/JMSS15071301.pdf>
- Oluyede, B. O., Motsewabagale, G., Huang, S., Warahena-Liyana, G., & Pararai, M. (2016). Dagum-poisson distribution: model, properties and application. *Electronic Journal of Applied Statistical Sciences*, 9(1), 169. <https://doi.org/10.1285/i20705948v9n1p169>
- Oluyede, B. O., Warahena-Liyana, G., & Pararai, M. (2016). A new compound class of log-logistic Weibull–Poisson distribution: model, properties and applications. *Journal of Statistical Computation and Simulation*, 86(7), 1363-1391. <https://doi.org/10.1080/00949655.2015.1064409>
- Pararai, M., Warahena-Liyana, G., & Oluyede, B. O. (2015). Extended Lindley Poisson Distribution. *Journal of Mathematics and Statistical Science*, 1(5), 167. Retrieved from <http://www.ss-pub.org/wp-content/uploads/2015/12/JMSS15071301.pdf>
- Pararai, M., Warahena-Liyana, G., & Oluyede, B. O. (2015). A new class of generalized power Lindley distribution with applications to lifetime data. *Theoretical mathematics and applications*, 5(1), 53. Retrieved from https://www.scienpress.com/Upload/TMA/Vol%205_1_5.pdf
- Warahena-Liyana, G., & Pararai, M. (2015). The Lindley power series class of distributions: model, properties and applications. *Journal of Computations & Modelling* 5, 35-80. Retrieved from http://www.scienpress.com/Upload/JCM/Vol%205_3_2.pdf
- Pararai, M., Oluyede, B. O., & Warahena-Liyana, G. (2015). Kumaraswamy Lindley-Poisson distribution: theory and applications. *Asian Journal of Mathematics and Applications*, 2015. Retrieved from <https://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1379&context=math-sci-facpubs>
- Warahena-Liyana, G., & Pararai, M. (2014). A generalized power Lindley distribution with applications. *Asian Journal of Mathematics and Applications*, 2014. Retrieved from <https://scienceasia.asia/files/169.pdf>
- Pararai, M., Warahena-Liyana, G., & Oluyede, B. O. (2014). A New Class of Generalized Inverse Weibull Distribution with Applications. *Journal of Applied Mathematics and Bioinformatics*, 4(2), 17. Retrieved from http://www.scienpress.com/Upload/JAMB/Vol%204_2_2.pdf

Grants/Awards

- 2023 Dr. Kenneth C. Schraut Faculty Research Award in Mathematics, \$1200.
- Experiential Learning Innovation Fund for Faculty (ELIFF), Ying-Ju Chen, Gayan Warahena-Liyana & Matthew Wascher, \$750 (December 2022).
- Travel Grant Award for Junior Researcher Speakers at International Conference on Statistical Distributions and Applications (ICOSDA), \$800 (October 2022).

Presentations

Presentations at Professional Meetings.....

- Fourth Central Botswana Mathematics and Statistical Sciences (CBMSS) Conference, “A New Flexible Family of Distributions Based on the Generalized Topp-Leone-G Power Series Framework”, Department of Mathematics and Statistical Sciences, Botswana International University of Science and Technology, Palapye, Botswana. Invited Virtual Presentation. Mar 12, 2026.
- Colloquium, Department of Mathematics, University of Dayton, “A New Flexible Family of Distributions Based on the Generalized Topp-Leone-G Power Series Framework”. Oct 16, 2025.
- 2025 Joint Statistical Meetings (JSM 2025), “Modification to the LASSO Regression Model via its Bayesian Interpretation”, Nashville, TN. Contributed Presentation. Aug 2-7, 2025.
- Tenth International Conference on Statistics for Twenty-first Century (ICSTC), “Generalized Topp-Leone-G Power Series Distributions: properties and applications”, University of Kerala, India. Invited Virtual Presentation. Dec 15, 2024.
- 2024 Symposium on Data Science & Statistics (SDSS), “A Generalized LASSO Model via Bayesian Interpretation”, Richmond, VA. Contributed Presentation. June 4-7, 2024.
- 8th Costal Bend Mathematics & Statistics Conference (8CBMSC), “Modify the LASSO Regression Model via its Bayesian Interpretation”, Texas A&M University Kingsville. Contributed Virtual Presentation. Apr 6, 2024.
- Third Central Botswana Mathematics and Statistical Sciences (CBMSS) Conference, “The well-known LASSO regression model modified with generalized distributions”, Department of Mathematics and Statistical Sciences,

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Botswana International University of Science and Technology, Palapye, Botswana. Invited Virtual Presentation. Mar 14-15, 2024.

- International Conference on Statistics and Data Science (ICSIDS) in conjunction with 45th Annual Conference of Kerala Statistical Association, “A Generalization of the Laplace Distribution and its Application to the LASSO Regression Model”, Sree Sankara College, Kalady, India. Contributed Virtual Presentation. Jan 22-24, 2024.
- Ninth International Conference on Statistics for Twenty-first Century (ICSTC), “A Generalization of the Laplace Distribution and its Application to the LASSO Regression Model”, University of Kerala, India. Invited Virtual Presentation. Dec 15-16, 2023.
- International Conference on Statistical Distributions and Applications (ICOSDA), “A Generalization LASSO Modeling via Bayesian Interpretation”, Marshall University, Huntington, WV. Invited Presentation. Oct 13 -15, 2022.
- Allegheny Mountain Section Meeting of the Mathematical Association of America (MAA), “Mars Rover Optimal Path Determination”, Westminster College, New Wilmington, PA. Contributed Presentation. 2014.

Other Talks.....

- UD Math Club Talk, “LASSO”, University of Dayton, Dayton, OH. Invited Presentation. Nov 14, 2022.
- CMU’s Annual Student Research and Creative Endeavors Exhibition, “Prevalence of Coronary Heart Disease in Rural and Urban areas in the United States in 2016”, Central Michigan University, Mount Pleasant, MI. Contributed Presentation. 2018.
- Second Mathematics Department Student Presentation Day, “Matching Algorithms with Utility Theory”, Department of Mathematics, Indiana University of Pennsylvania, Indiana, PA. Contributed Presentation. 2014.
- Second Mathematics Department Student Presentation Day, “Elimination and Clinching Optimization in Baseball”, Department of Mathematics, Indiana University of Pennsylvania, Indiana, PA. Contributed Presentation. 2014.
- Second Mathematics Department Student Presentation Day, “Mars Rover Optimal Path Determination”, Department of Mathematics, Indiana University of Pennsylvania, Indiana, PA. Contributed Presentation. 2014.
- Internship Presentation Series 2010, “Software Tools: A Factory Status Visualization System, A Planning Tool and A Defects Analyzing Tool”, Department of Mathematics, University of Peradeniya, Sri Lanka. Contributed Presentation. 2010.
- Internship Presentation Series 2010, “Quality Improvement Using Techniques in Statistical Quality Control”, Department of Mathematics, University of Peradeniya, Sri Lanka. Contributed Presentation. 2010.
- Seminar Presentation Series 2009, “Determination of An Optimal Route to Minimize the Fuel Cost Using the Concepts in Travelling Salesman Problem (TSP)”, Department of Mathematics, University of Peradeniya, Sri Lanka. Contributed Presentation. 2009.

Workshops

- Guest speaker for RPL 518 – Research and Philosophy in RPL course by Dr. Kyunghee Lee, A Presentation on Basic Statistics and Using SPSS statistical software, Department of Recreation, Parks, and Leisure Services Administration, Central Michigan University, Mount Pleasant, MI. Oct 2017.
- Guest speaker for RPL 518 - Research and Philosophy in RPL course by Dr. Kyunghee Lee, A Workshop on Using SPSS Statistical Software, Department of Recreation, Parks, and Leisure Services Administration, Central Michigan University, Mount Pleasant, MI. Feb 2017.
- Research Appreciation Week Workshop, How Can the Applied Research Lab (ARL) Help You with Your Research, Indiana University of Pennsylvania, Indiana, PA. 2014.

Service

Service to the Mathematics Department.....

- Served as a peer teaching evaluator (2) Spring 2026, Spring 2023
Tasks:
Observed classes, completed the teaching checklist, and submitted a report with feedback to support teaching improvement.
- Served as a volunteer at the Math Help Center Spring 2026, Fall 2025, Spring 2025
Tasks:

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Helped students at the Math Help Center by explaining math concepts, answering questions, and guiding them through problems to improve their understanding.

- Data Analytics Major Committee Fall 2025 – Present
Tasks:
Participated in committee discussions, curriculum development, and preparation of the proposal for submission to the Senate. The major was approved in fall 2025.
- Actuarial Minor Revision Committee Fall 2025 – Present
Tasks:
Revised the Actuarial Science minor and contributed to discussions on streamlining the curriculum by reducing the total credit hours and required courses.
- Math Help Center Fall 2025, Spring 2025
- Sabbatical Committee for Dr. Ruihua Liu Fall 2024 – Present
Tasks:
Assisted with reviewing the proposal for sabbatical.
- Sabbatical Committee for Dr. Ying-Ju Chen Fall 2023 – Fall 2025
Tasks:
Assisted with reviewing the proposal for sabbatical.
- Vision Committee Fall 2023 – Spring 2024
Tasks:
Participated in committee discussions about hiring the next five hires, and wrote hiring justifications for one position being considered for hire.
- Statistics Major Committee Fall 2023 – Spring 2024
Tasks:
Participated in committee discussions, had discussions with the tenure line faculty members in mathematics department to see if they had any concerns about the curriculum or questions. Participated in discussions to include two new statistics courses (Bayesian Statistics and Computational Statistics). In spring 2024, the major was approved. Contributed to the creation of a flyer to promote the new BS in Statistics degree to incoming students.
- Search committee to fill a tenure-track Statistician position in 2023 Fall 2022 – Spring 2023
Tasks:
Participated in developing the job description and the minimum and preferred requirements for the position. Contributed to the initial screening of applicants and the development of rubrics for evaluating them. Participated in search committee meetings to discuss and assess candidates' qualifications. Engaged in interviewing, evaluating and ranking candidates for on-campus interviews. Involved in meetings with search committee and opt-in faculty to discuss and assess top three candidates. The search was successfully concluded in spring 2023.
- Refereed an article for the Electronic Proceedings of Undergraduate Mathematics Day Spring 2022
- UD Data Analytics Curriculum Committee Fall 2021 – Spring 2022
Tasks:
Explored data analytics programs in other schools. Discussed the logistics for proposing a data analytics minor. Had discussions with the tenure line faculty members in mathematics department to see if they had any concerns about the curriculum or questions. Had discussions with several data analysts/scientists in the industry. A proposal for the data analytics minor was constructed, as well as proposals for four new courses included in the minor. The new minor in Data Analytics and the four courses were approved in spring 2022.
- UD MTH 207 Textbook Review Committee Fall 2021 – Spring 2022

Tasks:

Different versions of the textbook and the course policy were reviewed. A revised course policy has been developed.

Service to the University.....

- Library's Ruhlman Awards committee Spring 2026, Spring 2025, Spring 2024
Evaluated applications for the Brother Frank Ruhlman, S.M., Award of Excellence for Literary Achievement
- University Hearing Board Fall 2024 – Present
Participated in trainings and hearings.
- University Library Committee Fall 2023 – Present
Participated in committee discussions.

Service to the Profession.....

- Served as an external PhD thesis examiner Fall 2023
Examined a PhD thesis from the Department of Statistics and Operations research, Faculty of Applied Science, National University of Science and Technology, Bulawayo, Zimbabwe.

- Serving as a judge for the Undergraduate Statistics Project Competition (USPROC)
The competition was organized by the Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) and the American Statistical Association (ASA).
 - A total of five projects were evaluated under the introductory category Summer 2025
 - A total of five projects were evaluated under the introductory category Winter 2024
 - A total of four projects were evaluated under the introductory category Summer 2024
 - A total of five projects were evaluated under the intermediate category Spring 2024
 - A total of six projects were evaluated under the intermediate category Summer 2023
 - A total of seven projects were evaluated under the introductory category Fall 2022
 - A total of seven projects were evaluated under the intermediate category Spring 2022

- Manuscript Reviewer
 - Scientific Reports (1)
 - International Journal of Mathematical Modelling and Numerical Optimisation (1)
 - Axioms (2)
 - Austrian Journal of Statistics (AJS) (2)
 - Electronic Research Archive (ERA) (1)
 - Journal of Statistics Applications & Probability Letters (JSAPL) (1)
 - Pakistan Journal of Statistics and Operations Research (PJSOR) (2)
 - Mathematica Slovaca – De Gruyter (2)
 - Statistics in Transition New Series (1)
 - Journal of Statistical Distributions and Applications (1)

Professional Affiliations

- American Statistical Association