Priyantha Wijayatunga

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ORCID: https://orcid.org/0000-0003-1654-9148
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Academic and Research Interests

Teaching probability, statistics, data science, machine learning methodologies, and undergraduate level pure mathematics; doing methodological developments in mathematical statistics, and probabilistic and statistical modeling; performing probabilistic, statistical, machine learning and artificial intelligence applications in different scientific fields such as medicine, health and welfare, economics and business, and society; Have knowledge and experience in using Learning Management System
Software skills: R, Python, SPSS, Minitab, Latex, Microsoft Applications, SQL, machine learning tools.
Languages: Fluent in English and higher intermediate-level proficiency in Swedish.

Personal Skills

Learning required knowledge and contents quickly; independent as well as highly cooperative; result driven and target oriented, initiative and taking challenges; applying logical and analytical reasoning and critical thinking skills; being clear, informative, accurate and convincing; having strong interpersonal and communication skills; interaction with the society and related external parties well

Education

Tokyo Institute of Technology, Tokyo, Japan

- D.Sc. Degree in Mathematical and Computing Sciences (2007)
  Advisor: Prof. Shigeru Mase
  Thesis Title: Statistical Analysis and Application of Naïve Bayesian Network Classifier
- M.Sc. Degree in Mathematical and Computing Sciences (2004)
  Advisor: Prof. Shigeru Mase
  Thesis Title: Graphical Model Selection

University of Cambridge, UK

- Diploma in Mathematical Statistics (1998)
  Thesis title: *Analysis of Brain Image Data*

University of Kelaniya, Kelaniya, Sri Lanka

- B.Sc. Degree *Mathematics: First Class Honors* (1993)
  Thesis: *Statistical Inference Program for Applied Scientists*

Work Experience

Statlytika: Statistical and Data Analytics, Umeå, Sweden

URL: https://priyantha-wijayatunga.github.io/statlytika/

[1]Updated May 6, 2025

- Statistical and Data Analytical Consultant (Jan/01/2025–to date)
  Assignments: Providing various statistical consultancies for business and research, and statistical training

Umeå University, Umeå, Sweden

- Associate Professor/Senior Lecturer in Statistics (Apr/01/2008–Dec/31/2024)
  Assignments: Undergraduate and graduate teaching and doing research in statistics and data science.

Tokyo Institute of Technology, Tokyo, Japan

- Postdoctoral Fellow in Computer Science (Apr/01/2007–Mar/31/2008)
  Assignments: Computational modeling of bioinformatics data

Wayamba University, Sri Lanka

- Lecturer in Mathematics (Aug/01/1996–Mar/31/2001)
  Assignments: Undergraduate teaching and doing research in statistics and data science

Union Assurance Ltd Sri Lanka

- Actuarial Assistant (Aug/01/1994–Jul/31/1996)
  Assignments: Calculating financial risks, valuation of life assurance, actuarial modeling, etc.

University of Kelaniya, Kelaniya Sri Lanka

- Tutor in Mathematics (Aug/01/1993–Jul/31/1994)
  Assignments: Conduction tutorial class for undergraduates and doing research in mathematics, statistics

Certificates in Higher Education Pedagogy

- Certificate in Didactics for University Teachers [2 weeks] (2024), Umeå University, Sweden
- Certificate in Communication for Learning [2 weeks] (2024), Umeå University Sweden
- Certificate in Higher Education Pedagogy [2 weeks] (2023), Umeå University Sweden
- Certificate in Problem Based Learning and Case Methods [2 week] (2013), Umeå University Sweden
- Certificate in Postgraduate Supervision [2 week] (2013), Umeå University Sweden
- Certificate in Introduction to University Teaching [1 weeks] (2010), Umeå University Sweden
- Certificate in Teaching and Learning with ICT [2 weeks] (2009), Umeå University Sweden
- Certificate in English for University Teachers [1 week] (2008), Umeå University Sweden
- Certificate in Teaching in Higher Education [2 weeks] (2000), University of Colombo Sri Lanka

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External Research Grants

- **Project**: Bayesian causal graphical models for prediction of unemployment persistence (Leader)
  Funder: Swedish Council for Working Life and Social Research (FAS/FORTE)
  Amount: 2.3 million SEK
  Period: 2011–2013

- **Project**: New methods based on artificial intelligence for big data analysis within Biomedical Engineering and Radiation Sciences (Co-applicant)
  Funder: Department of Digitalisation, Region Västerbotten and Department of Radiation Sciences, Umeå University, Sweden
  Amount: 1.23 million SEK
  Period: 2019-2020

Graduate Awards

- **Cambridge Commonwealth Trust Award**, Period: 1998–1998

- **Japanese Government (Monbukagakusho) Scholarship**, Period: 2001-2007

Publications (Refereed)

Probability, Statistics and Artificial Intelligence

- Wijayatunga, P. (2023). Some Cases of Prediction and Inference with Uncertainty. In: Abraham, A., Hanne, T., Gandhi, N., Manghirmalani Mishra, P., Bajaj, A., Siarry, P. (eds) Proceedings of the 14th International Conference on Soft Computing and Pattern Recognition (SoCPaR 2022). SoCPaR 2022. Lecture Notes in Networks and Systems, 648. Springer, Cham.
  https://doi.org/10.1007/978-3-031-27524-1_25

- Wijayatunga, P., Koskinen, L.-O. D. and Sundström, N. (2022). Probabilistic Prediction of Increased Intracranial Pressure in Patients with Severe Traumatic Brain Injury. Scientific Reports, 12:9600.
  https://doi.org/10.1038/s41598-022-13732-x

- Wijayatunga, P. (2019). Resolution to four probability paradoxes: Two-envelope, Wallet-game, Sleeping Beauty and Newcomb's, In Luís Meira-Machado and Gustavo Soutinho (ed.), Proceedings of the 34th International Workshop on Statistical Modeling 2019, Guimarães, Portugal, II, 252-257.
  https://umu.diva-portal.org/smash/get/diva2:1341188/FULLTEXT01.pdf

- Wijayatunga, P. (2019). Probability, Paradoxes and Human Thinking, Proceedings of The 15th Conference of the Swedish Cognitive Science Society (SweCog 2019) Umeå Sweden, 54-56.
  https://umu.diva-portal.org/smash/get/diva2:1368738/FULLTEXT01.pdf

- Wijayatunga, P. (2017). On Measuring Statistical Dependence, In: Gloria Scientiam, The Golden Jubilee Commemorative Volume of the Faculty of Science, University of Kelaniya, Sri Lanka, M.J.S. Wijeyaratne and W.U. Chandraseara (Eds.), University of Kelaniya, Sri Lanka, pp.507-513.
  https://hal.archives-ouvertes.fr/hal-03533662

- Wijayatunga, P. (2017). Resolving the Lord's Paradox, In Proceedings of the 32th International Workshop on Statistical Modeling 2017, Johann Bernoulli Institute, Rijksuniversiteit, Groningen, The Netherlands, II, 223–226.
  http://umu.diva-portal.org/smash/get/diva2:1120300/FULLTEXT01.pdf

- Wijayatunga, P. (2016). A geometric view on Pearson's correlation coefficient and a generalization of it to non-linear dependencies, Ratio Mathematica, 30, 3–21.
  http://dx.doi.org/10.23755/rm.v30i1.5

- Wijayatunga, P. (2015). Probabilistic Analysis of Balancing Scores for Causal Inference, Journal of Mathematics Research, 7(2), 90–100. DOI:10.5539/jmr.v7n2p90. https://www.ccsenet.org/journal/index.php/jmr/article/view/47289

- Wijayatunga, P. (2015). On Associative Confounder Bias. In Nowaczyk, S. (Ed.), Proceedings of The Thirteenth Scandinavian Conference on Artificial Intelligence, Halmstad Sweden, 157–166. doi:10.3233/978-1-61499-589-0-157. https://ebooks.iospress.nl/publication/41275

- Wijayatunga, P. (2014). Viewing Simpson's Paradox, Statistica & Applicazioni (Statistics & Applications), XII(2), 225–235. https://www.torrossa.com/it/resources/an/3078978

- Wijayatunga, P. (2014). Causal Effect Estimation Methods, Journal of Statistical and Econometric Methods, Vol. 3(2),153-170. https://www.scienpress.com/Upload/JSEM/Vol%203_2_9.pdf

- Wijayatunga, P. and de Luna, X. (2013). A Consistency Result for Bayes Classifiers with Censored Response Data, Journal of Mathematics and Applications, 3(4), 47-54. https://doi.org/10.48550/arXiv.1410.8855

- Wijayatunga, P. and Mase, S. (2007). Asymptotic Properties of Maximum Collective Conditional Likelihood Estimators for Naïve Bayes Classifiers, International Journal of Statistics and Systems [accepted in October, 2006, but not published] Technical Report B-432, Department of Mathematical and Computing Sciences, Tokyo Institute of Technology, Tokyo, Japan. https://www.is.c.titech.ac.jp/report-b/B-432.pdf

- Wijayatunga, P., Mase, S. & Nakamura, M., (2006). Appraisal of Companies with Bayesian Networks, International Journal of Business Intelligence and Data Mining, 1(3), 329–346. https://doi.org/10.1504/IJBIDM.2006.009138

Medical Statistics

- Suhr, O. B., Wixner, J., Anan, I., Lundgren, H-E., Wijayatunga, P., Westermark, P. and Ihse, E., (2019). Amyloid fibril composition within hereditary Val30Met (p. Val50Met) transthyretin amyloidosis families, PLoS ONE 14(2): e0211983. https://doi.org/10.1371/journal.pone.0211983

- Brink M, Hansson M, Mathsson-Alm L, Wijayatunga, P., Verheul, M. K., Trouw, L. A., Holmdahl, R., Rönnelid, J., Klareskog, L. and Rantapää-Dahlqvist, S. (2016). Rheumatoid factor isotypes in relation to antibodies against citrullinated peptides and carbamylated proteins before the onset of rheumatoid arthritis, Arthritis Research & Therapy,18, 43. doi:10.1186/s13075-016-0940-2 https://pmc.ncbi.nlm.nih.gov/articles/PMC4748586/

- Ericzon, B-G., Wilczek, H. E., Larsson, M. Wijayatunga, P. and others. (2015). Liver transplantation for hereditary transthyretin amyloidosis: After 20 years still the best therapeutic alternative?, Transplantation, 99(9),1847–1854. doi:10.1097/TP.0000000000000574. https://journals.lww.com/transplantjournal/fulltext/2015/09000/liver_transplantation_for_hereditary_transthyretin.18.aspx

- Ericzon, B-G., Wilczek, H. E., Larsson, M., Stangou, A. J., Wijayatunga, and Suhr, O. (2013). To transplant or not to transplant - Lessons learned from 20 years global collaboration in liver transplantation for hereditary transthyretin amyloidosis, Hepatology, 58: 1011A-1011A.

- Okamoto, S., Zhao, Y., Lindqvist, P., Backman, C., Ericzon, B., Wijayatunga, P., Henein, M., and Suhr, O. (2011). Development of cardiomyopathy after liver transplantation in Swedish hereditary transthyretin amyloidosis (ATTR) patients, Amyloid, 8(4), 200–2005.

- Okamoto, S., Hörnsten, R., Obayashi, K., Wijayatunga, P. & Suhr. O., (2010). Continuous Development of Arrhythmia is Observed in Transplanted Swedish Familial Amyloidotic Polyneuropathy (ATTR Val30Met) Patients, Liver Transplantation, 17(2), 122–128.

Editorials

- Ali H, Shah Z, Alam T, Wijayatunga P and Elyan E (2024) Editorial: Recent advances in multimodal artificial intelligence for disease diagnosis, prognosis, and prevention. Front. Radiol. 3:1349830. https://doi.org/10.3389/fradi.2023.1349830
- Wijayatunga P., Bandyopadhyay P. S., and Woodcock, S. (2024) Editorial: Probability and its paradoxes for critical thinking. Frontiers in Education. 9:1474013. https://doi.org/10.3389/feduc.2024.1474013

Other Work as Guest Editor

- Wijayatunga P (2024) Causal Inference, Probability Theory and Graphical Concepts. Computation, MDPI . https://www.mdpi.com/journal/computation/special_issues/Causal_Inference_Probability_Theory

Discussions and Preprints

In Major Statistical Journals

- Wijayatunga, P. (2023). Priyantha Wijayatunga's contribution to the Discussion of "Martingale Posterior Distributions" by Fong, Holmes and Walker, Journal of the Royal Statistical Society Series B: Statistical Methodology, https://doi.org/10.1093/jrsssb/qkad099
- Wijayatunga, P. (2023). Discussion on the paper "Experimental Evaluation of Algorithm-Assisted Human Decision-Making". Journal of the Royal Statistical Society: Series A (Statistics in Society), https://doi.org/10.1093/jrsssa/qnad025
- Wijayatunga, P. (2021). Discussion on the paper "Gaussian Differential Privacy". Journal of the Royal Statistical Society: Series B (Statistical Methodology), https://doi.org/10.1111/rssb.12462
- Wijayatunga, P. (2021). Priyantha Wijayatunga's contribution to the Discussion of 'Testing by betting: A strategy for statistical and scientific communication' by Glenn Shafer. Journal of the Royal Statistical Society: Series A (Statistics in Society), 184(2), 465-466. https://doi.org/10.1111/rssa.12670
- Wijayatunga, P. (2019). Discussion on the meeting on "Data visualization". Journal of the Royal Statistical Society: Series A (Statistics in Society), 182(2), 433-434. https://doi.org/10.1111/rssa.12435
- Wijayatunga, P. (2018). Discussion on the Paper "Statistical challenges of administrative and transaction data" by David J. Hand. Journal of the Royal Statistical Society: Series A (Statistics in Society), 181(3), 598–599. https://doi.org/10.1111/rssa.12315
- Wijayatunga, P. (2017). Discussion on the Paper "Sparse graphs using exchangeable random measures" by Caron and Fox. Journal of the Royal Statistical Society: Series B (Statistical Methodology), 79(5), 1359–1359. https://doi.org/10.1111/rssb.12233
- Wijayatunga, P. (2017). Discussion on the Paper "Beyond objective and subjective in statistics" by Gelman and Hennig. Journal of the Royal Statistical Society: Series A (Statistics in Society), 180(4), 023–1024. https://doi.org/10.1111/rssa.12276

Preprints

- Wijayatunga, P. (2025). Probability Paradoxes for Increasing Critical Thinking Skills. Preprints 2024100935. https://doi.org/10.20944/preprints202410.0935.v1
- Wijayatunga, P. (2025). Resolving Jeffreys-Lindley Paradox. Preprint https://arxiv.org/abs/2503.14650

- Wijayatunga, P. (2025). There is no conflict between Bayesian and frequentist hypothesis testing: Resolving Jeffreys-Lindley Paradox. Related preprint slides: https://www.academia.edu/127073978/Jeffreys_Lindley_Paradox_Null_Hypothesis_Testing_and_Probability_Peculiarities

- On Protein–Protein Interaction Prediction with Yeast Two–hybrid Experiment Data and Protein Domain Associations, (2008). The 5th Data Assimilation Workshop, Tokyo, Japan. https://www.academia.edu/51838006/On_Protein_Protein_Interaction_Prediction_with_Yeast_Two_hybrid_Experiment_Data_and_Protein_Domain_Associations

Invited Talks

1. *Jeffreys-Lindley Paradox, Null Hypothesis Testing and Probability Peculiarities.* The 4th International Workshop on Mathematical Sciences, Department of Mathematical Sciences, Wayamba University, Sri Lanka., 2024.

Contributed Talks in International Conferences

16. *Resolving Jeffreys-Lindley Paradox.* The Bernoulii-IMS 11th World Congress in Probability and Statistics, Ruhr University, Bochum, Germany, 2024.

15. *Modeling Predictive Uncertainty in Probabilistic and Black-Box Models.* European Meetings of Statisticians, Warsaw, Poland, 2023.

14. *Some Cases of Prediction and Inference with Uncertainty.* International Conference on Soft Computing and Pattern Recognition (SoCPaR2022, KLE Technological University, India (Online), 2022.

13. *Uncertainty in P-Values, Monty Hall Problem and, Bayesian and Neural Network Predictions.* International Symposium on Artificial Intelligence and Mathematics (ISAIM2022), Florida, USA, 2022.

12. *Resolution to four probability paradoxes: Two-envelope, Wallet-game, Sleeping Beauty and Newcomb's.* The 34th International Workshop on Statistical Modeling, Guimarães, Portugal, 2019.

11. *Measuring Statistical Dependence.* Workshop on Financial Econometrics, Örebro, Sweden, Nov/07–08/2018.

10. *Resolving the Lord's Paradox with Predictive and Causal Arguments.* The 27th Nordic Conference in Mathematical Statistics, Tartu, Estonia, Jun/2018.

9. *Propensity Scores in Causal Diagrams and Causal Estimates in Different Data Contexts.* The 10th International Conference on Computational and Financial Econometrics (CFE 2016) and the 9th International Conference of the ERCIM Working Group on Computational and Methodological Statistics (CMStatistics 2016), Sevilla, Spain, Dec/2016.

8. *On Associative Confounder Bias.* The Thirteenth Scandinavian Conference on Artificial Intelligence, Halmstad, Sweden, Nov/2015.

7. *On Associative Confounder Bias.* The Conference of the International Federation of Classification Societies, Bolonga, Italy, Jul/2015.

6. *Balancing Scores in Causal Effect Estimation with Observational Data.* Seventh International Conference of the ERCIM Working Group on Computational and Methodological Statistics (ERCIM 2014), University of Pisa, Italy, Dec/2014.

5. *Measuring the Degree of Dependence.* Sixth International Conference of the ERCIM Working Group on Computational and Methodological Statistics (ERCIM 2013), University of London, UK, Dec/2013.

4. *Measuring Degree of Stochastic Dependence.* The 4th Nordic–Baltic Biometric Conference, Stockholm, Sweden, Jun/2013.

3. *Statistical estimation problems in causal inference: equating propensity scores.* Fifth International Conference of the ERCIM Working Group on Computing and Statistics (ERCIM 2012), Oviedo, Spain, Dec/2012.

2. *On Degree of Dependence.* The 24th Nordic Conference in Mathematical Statistics, Umeå Sweden, Jun/2012.

1. *Asymptotic Properties of Collective Conditional Likelihood Estimators for Bayesian Network Classifiers with Censored Data.* The 2nd Nordic–Baltic Biometric Conference, University of Tartu, Estonia, Jun/2009.

Tutorials in International Conferences and Doctoral Schools

4. *Regression Methods with R.* Data Science Bootcamp (Statisticians Without Borders Project 226), University of Lagos Nigeria , Aug/07-18/2023.

3. *Probabilistic Graphical Models and Their Inferences (Tutorial).* In 2019 IEEE 4th International Workshops on Foundations and Applications of Self* Systems (FAS*W), 251-252, Umea, Sweden, 2019, DOI: 10.1109/FAS-W.2019.00067.

2. *Probabilistic Graphical Models and Causal Network Models.* International Winter School in Machine and Deep Learning for Neurological Diseases, University of Pavia and Mondino Foundation, Italy, Dec/03-07/2018.

1. *Big Data, causality and unrealistic correlation.* Doctoral Degree Workshop on Big Data and Digitalization, University of Vasa, Finland, 2017.

Contributed Talks in Local Conferences

3. *Propensity Scores in Causal Diagrams and Causal Estimates in Different Data Contexts.* Winter Conference in Statistics, Åre, Sweden, 2017.

2. *On Protein–Protein Interaction Prediction with Yeast–two Hybrid Experimental Data and Protein Domain Associations.* The 5th Data Assimilation Workshop, Tokyo, Japan, Mar/2008.

1. *Applying Bayesian Networks for Credit Rating of Companies.* The 3rd Mathematical Science Forum of Tokyo Institute of Technology, Tokyo, Japan, March/2005.

Other Publications and Personal Communications

- Correlation and Causation Explained, (2013), Significance Web Exclusive, The Royal Statistical Society UK, https://significancemagazine.com/correlation-and-causation-explained/ or https://www.academia.edu/65877260/Correlation_and_causation_explained

- Bayesian Theory and Applications – Book Review, (2013), Qvintensen, 4, pp. 18-19. https://statistikframjandet.se/wp-content/uploads/2021/02/gvintensen-2013-4.pdf

- Causal Inference –a Book Review, (2011), Qvintensen, 3, pp. 11. https://statistikframjandet.se/wp-content/uploads/2021/02/gvintensen-2011-3.pdf

- Climate in Vemdalen' –a scientific report on statistics and climate conference 2010, Vemdalen, Sweden, (2010), Qvintensen, 2, pp. 18. https://statistikframjandet.se/wp-content/uploads/2021/02/gvintensen-2010-2.pdf

References

- Professor Xavier de Luna
  Department of Statistics, Umeå University, Umeå, Sweden
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  Email: xavier.de.luna@umu.se

- Associate Professor Nina Sundström
  Department of Radiation Sciences, Radiation Physics, Umeå University, Umeå Sweden
  Tel: 0046 70-338 44 82 and 0046 90-785 40 28
  Email: nina.sundstrom@umu.se and nina.sundstrom@regionvasterbotten.se

- Professor Marie Eriksson
  Department of Statistics, Umeå University, Umeå, Sweden
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- Dr. Devindri Perera
  Senior Lecturer in Statistics and Data Science
  School of Electrical Engineering, Computer Science, Mathematics and Statistics, Curtin University, Perth, Western Australia, Australia.
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