

Willem van den Boom

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Education	Duke University, Department of Statistical Science	
	Ph.D. in Statistical Science	2018
	Certificate in College Teaching	2018
	M.S. in Statistical Science	2016
	Dissertation: Tailored scalable dimensionality reduction	
	Advisors: David B. Dunson and Galen Reeves	
	Utrecht University, University College Roosevelt	
	B.Sc. in Liberal Arts and Sciences	2014
	Major in Mathematics, Computer Science, and Physics	
	Minor in Methods & Statistics	
Academic positions	Agency for Science, Technology and Research (A*STAR), Institute for Human Development and Potential, Singapore	
	Scientist	2024 – 2025
	Visiting Fellow	2020 – 2021
	National University of Singapore, Yong Loo Lin School of Medicine	
	Senior Research Fellow	2021 – 2024
	National University of Singapore, Yale-NUS College, Division of Science	
	Senior Research Fellow	2021
	Research Fellow	2020 – 2021
	Lecturer	2019 – 2020
	Research Fellow	2019
	National University of Singapore, Department of Statistics and Data Science	
	Research Fellow	2018 – 2019
Research grants	Principal Investigator, ‘Optimal treatment target identification from longitudinal electronic medical records’, National Medical Research Council, Young Individual Research Grant, S\$298,000	2020 – 2024

Publications:
Peer reviewed

1. van den Boom, W., Cremaschi, A., and Thiery, A.H. (2026). Doubly adaptive importance sampling. *Journal of Computational and Graphical Statistics*, 35(1), 330–338. doi:10.1080/10618600.2025.2530048
2. Cremaschi, A., van den Boom, W., Ng, N.B.H., Franzolini, B., Tan, K.B., Yen, J.C.K., Tan, K.H., Chong, Y.-S., Eriksson, J.G., De Iorio, M. (2025). Postpartum screening for type 2 diabetes in women with a history of gestational diabetes mellitus: A cost-effectiveness analysis in Singapore. *Value in Health Regional Issues*, 45, 101048. doi:10.1016/j.vhri.2024.101048
3. van den Boom, W., De Iorio, M., Qian, F., and Guglielmi, A. (2024). The Multivariate Bernoulli detector: Change point estimation in discrete survival analysis. *Biometrics*, 80(3), ujae075. doi:10.1093/biomtc/ujae075
4. Qian, F., van den Boom, W., and See, K.C. (2024). The new global definition of acute respiratory distress syndrome: Insights from the MIMIC-IV database. *Intensive Care Medicine*, 50(4), 608–609. doi:10.1007/10.1007/s00134-024-07383-x
5. Saini, S., Manai, G., van den Boom, W., De Iorio, M., and Qian, F. (2024). Invoice level forecasting with discrete survival methods for effective forecasting of account receivables in supply chain. *Discover Analytics*, 2, 5. doi:10.1007/s44257-024-00013-2
6. Natarajan, A., van den Boom, W., Odang, K.B., and De Iorio, M. (2024). On a wider class of prior distributions for graphical models. *Journal of Applied Probability*, 61(1), 230–243. doi:10.1017/jpr.2023.33
7. Feng, S.F., van den Boom, W., De Iorio, M., Thng, G.J., Chan, J.K.Y., Chen, H.Y., Tan, K.H., and Kee, M.Z.L. (2024). Joint modelling of mental health markers through pregnancy: A Bayesian semi-parametric approach. *Journal of Applied Statistics*, 51(2), 388–405. doi:10.1080/02664763.2022.2154329
8. van den Boom, W., De Iorio, M., and Beskos, A. (2023). Bayesian learning of graph substructures. *Bayesian Analysis*, 18(4), 1311–1339. doi:10.1214/22-BA1338
9. Qian, F., van den Boom, W., and See, K.C. (2023). Real-world evidence challenges controlled hypoxemia guidelines for critically ill patients with chronic obstructive pulmonary disease. *Intensive Care Medicine*, 49(9), 1133–1135. doi:10.1007/s00134-023-07166-w
10. Young, A.L., van den Boom, W., Schroeder, R.A., Krishnamoorthy, V., Raghunathan, K., Wu, H.T., and Dunson, D.B. (2023). Mutual information: Measuring nonlinear dependence in longitudinal epidemiological data. *PLOS ONE*, 18(4), e0284904. doi:10.1371/journal.pone.0284904

11. Franzolini, B., Cremaschi, A., van den Boom, W., and De Iorio, M. (2023). Bayesian clustering of multiple zero-inflated outcomes. *Philosophical Transactions of the Royal Society A*, 381(2247), 20220145. doi:10.1098/rsta.2022.0145
12. van den Boom, W., Beskos, A., and De Iorio, M. (2022). The G -Wishart weighted proposal algorithm: Efficient posterior computation for Gaussian graphical models. *Journal of Computational and Graphical Statistics*, 31(4), 1215–1224. doi:10.1080/10618600.2022.2050250
13. van den Boom, W., Jasra, A., De Iorio, M., Beskos, A., and Eriksson, J.G. (2022). Unbiased approximation of posteriors via coupled particle Markov chain Monte Carlo. *Statistics and Computing*, 32(3), 36. doi:10.1007/s11222-022-10093-3
14. van den Boom, W., De Iorio, M., and Tallarita, M. (2022). Bayesian inference on the number of recurrent events: A joint model of recurrence and survival. *Statistical Methods in Medical Research*, 31(1), 139–153. doi:10.1177/09622802211048059
15. Lysaght, T., Ballantyne, A., Toh, H.J., Lau, A., Ong, S., Schaefer, O., Shiraishi, M., van den Boom, W., Xafis, V., and Tai, E.S. (2021). Trust and trade-offs in sharing data for precision medicine: A national survey of Singapore. *Journal of Personalized Medicine*, 11(9), 921. doi:10.3390/jpm11090921
16. van den Boom, W., Reeves, G., and Dunson, D.B. (2021). Approximating posteriors with high-dimensional nuisance parameters via integrated rotated Gaussian approximation. *Biometrika*, 108(2), 269–282. doi:10.1093/biomet/asaa068
17. van den Boom, W., Hoy, M., Sankaran, J., Liu, M., Chahed, H., Feng, M., and See, K.C. (2020). The search for optimal oxygen saturation targets in critically ill patients: Observational data from large ICU databases. *Chest*, 157(3), 566–573. doi:10.1016/j.chest.2019.09.015
18. van den Boom, W., Mao, C., Schroeder, R.A., and Dunson, D.B. (2018). Extrema-weighted feature extraction for functional data. *Bioinformatics*, 34(14), 2457–2464. doi:10.1093/bioinformatics/bty120
19. van den Boom, W., Schroeder, R.A., Manning, M.W., Setji, T.L., Fiestan, G., and Dunson, D.B. (2018). Effect of A1C and glucose on postoperative mortality in noncardiac and cardiac surgeries. *Diabetes Care*, 41(4), 782–788. doi:10.2337/dc17-2232
20. van den Boom, W., Dunson, D., and Reeves, G. (2015). Quantifying uncertainty in variable selection with arbitrary matrices. *IEEE 6th International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, 385–388. doi:10.1109/CAMSAP.2015.7383817

Publications: Not peer reviewed	<ol style="list-style-type: none"> 1. Abbruzzo, A., Argentino, N., Mohammadi, R., De Iorio, M., van den Boom, W., and Beskos, A. (2024). MCMC sampling in Bayesian Gaussian structure learning. In: <i>Proceedings of the Statistics and Data Science 2024 Conference. New Perspectives on Statistics and Data Science</i>, pp. 176–181. 2. Qian, F., van den Boom, W., and See, K.C. (2024). The new global definition of ARDS loses one of the first games: A chromatic advice. Author's reply. <i>Intensive Care Medicine</i>, 50(6), 1003–1005. doi:10.1007/s00134-024-07457-w 3. Qian, F., van den Boom, W., and See, K.C. (2023). Different oxygenation targets for stable COPD and acute exacerbations in the ICU. Author's reply. <i>Intensive Care Medicine</i>, 49(11), 1430–1432. doi:10.1007/s00134-023-07229-y 4. van den Boom, W., Hoy, M., Sankaran, J., Liu, M., Chahed, H., Feng, M., and See, K.C. (2020). Response to letter to the editor. <i>Chest</i>, 158(3), 1287–1288. doi:10.1016/j.chest.2020.04.023 5. van den Boom, W., and Thiery, A. H. (2020). EP-IS: Combining expectation propagation and importance sampling for Bayesian non-linear inverse problems. In: <i>Proceeding. ISI World Statistics Congress 2019. Contributed Paper Session. (Volume 2)</i>, pp. 145–152.
Publications: Preprint	<ol style="list-style-type: none"> 1. De Iorio, M., van den Boom, W., Beskos, A., Jasra, A., and Cremaschi, A. (2023). Graph of graphs: From nodes to supernodes in graphical models. doi:10.48550/arXiv.2310.11741 2. van den Boom, W., Reeves, G., and Dunson, D.B. (2015). Scalable approximations of marginal posteriors in variable selection. doi:10.48550/arXiv.1506.06629
Honors & awards	<p>Best Student/Postdoc Contributed Paper Award. 2021 World Meeting of the International Society for Bayesian Analysis, 2021.</p> <p>Fulbright Grant. Fulbright Foreign Student Program, 2014.</p> <p>Graduated Summa Cum Laude. Utrecht University, University College Roosevelt, 2014.</p>
Invited talks	<ol style="list-style-type: none"> 1. The Multivariate Bernoulli detector: Change point detection in discrete survival analysis. <i>Satellite Workshop to ISBA World Meeting 2024</i>, Lugano, Switzerland, 2024. 2. Bayesian computation and learning of substructures in Gaussian graphical models. <i>Business Analytics Seminar</i>, University of Amsterdam, Amsterdam Business School, the Netherlands, 2023.

3. The Multivariate Bernoulli detector: Change point detection in discrete survival analysis. *16th International Conference of the ERCIM WG on Computational and Methodological Statistics and 17th International Conference on Computational and Financial Econometrics*, Berlin, Germany, 2023.
4. The G -Wishart weighted proposal algorithm: Efficient posterior computation for Gaussian graphical models. *6th International Conference on Econometrics and Statistics*, Tokyo, Japan, 2023.
5. Bayesian learning of graph substructures. *Statistics Across Campuses Seminar*, Australia, 2022.
6. Unbiased approximation of posteriors via coupled particle Markov chain Monte Carlo. *15th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing*, Linz, Austria, 2022.
7. The G -Wishart weighted proposal algorithm: Efficient posterior computation for Gaussian graphical models. *2022 World Meeting of the International Society for Bayesian Analysis*, Montreal, Canada, 2022.
8. Bayesian joint modelling of recurrence and survival: A conditional approach. *13th International Conference of the ERCIM WG on Computational and Methodological Statistics and 14th International Conference on Computational and Financial Econometrics*, London, United Kingdom, 2020.
9. Approximating high-dimensional posteriors with nuisance parameters via integrated rotated Gaussian approximation. *Bayesian Computation for High-Dimensional Statistical Models*, Institute of Mathematical Sciences, National University of Singapore, 2018.
10. Scalable posterior approximations of marginal posteriors in variable selection. *2017 Joint Statistical Meetings*, Baltimore, MD, United States, 2017.

Contributed talks

1. Bayesian learning of graph substructures. *13th International Conference on Bayesian Nonparametrics*, Puerto Varas, Chile, 2022.
2. Bayesian learning of graph substructures. *Bayesian Young Statisticians Meeting*, Montreal, Canada, 2022.
3. Stein adaptive importance sampling. *2021 World Meeting of the International Society for Bayesian Analysis*, online, 2021.
4. EP-IS: Combining expectation propagation and importance sampling for Bayesian nonlinear inverse problems. *62nd ISI World Statistics Congress*, Kuala Lumpur, Malaysia, 2019.

Poster presentations	<ol style="list-style-type: none"> 1. EP-IS: Combining expectation propagation and importance sampling for Bayesian nonlinear inverse problems. <i>12th Conference on Bayesian Nonparametrics</i>, Oxford, United Kingdom, 2019. 2. Flexible Bayesian feature extraction from varying length functional data. <i>11th Conference on Bayesian Nonparametrics</i>, Paris, France, 2017. 3. Effect of A1c and glucose on postoperative mortality in non-cardiac versus cardiac surgeries. <i>American Diabetes Association's 77th Scientific Sessions</i>, San Diego, CA, United States, 2017. 4. Scalable posterior approximation. <i>Laboratory for Analytic Sciences Symposium</i>, Raleigh, NC, United States, 2016. 5. Scalable posterior approximation in variable selection. <i>IEEE 6th International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)</i>, Cancun, Mexico, 2015. 6. Scalable posterior approximation in variable selection. <i>Laboratory for Analytic Sciences Symposium</i>, Raleigh, NC, United States, 2015.
Teaching experience	<p>National University of Singapore, Yale-NUS College <i>Instructor of Record.</i> Introduction to Data Science 2019 – 2020 Responsible for the design of this new course</p> <p><i>Instructor of Record.</i> Quantitative Reasoning 2019</p>
Duke University	<p><i>Instructor of Record.</i> Data Analysis and Statistical Inference 2017 Full credit course taught online</p> <p><i>Teaching Assistant.</i> Bayesian Methods and Modern Statistics 2017</p> <p><i>Project Manager and Mentor.</i> Data+ 2017 Summer research experience for students</p> <p><i>Teaching Assistant.</i> Data Analysis and Statistical Inference 2016</p>
Utrecht University, University College Roosevelt	<p><i>Teaching Assistant.</i> Mathematical Ideas & Methods in Context 2014</p>
Research experience	<p><i>Research Assistant</i> 2017 – 2018 Duke University, Department of Statistical Science</p> <p><i>Accenture Fellow</i> 2015 – 2017 Duke University, Rhodes Information Initiative at Duke</p>

Service: Representative of the Division of Biomedical Data Science, Department of Paediatrics, 2021 – 2024

Paediatrics Department Safety and Health Committee, 2021 – 2024

Maintenance of the website for the Mathematical, Computational & Statistical Sciences major, Yale-NUS College, 2019 – 2020

Evaluation Committee for Student-Initiated Research Projects of the Summer Research Programme, Yale-NUS College, 2020

Academic Sampler at the Experience Yale-NUS Weekend, 2019

Service: Associate Editor, Statistics and Computing, 2023 – 2025
Other

Bayesian Nonparametrics Networking Workshop, local organizing committee, 2024

Organizer of the invited session *Advances in Monte Carlo methods for Bayesian inference* at the conference of the Eastern Asia Chapter of the International Society for Bayesian Analysis (EAC-ISBA Conference 2024), Hong Kong, 2024

Committee for the student paper competition of the Section on Bayesian Statistical Science of the American Statistical Association, 2024

Bayesian Young Statisticians Meeting, scientific committee, 2023

junior-ISBA board, Secretary, 2020 – 2021

UTC+ Scientific Committee of the Blackwell-Rosenbluth Award, j-ISBA liaison, 2021

Reviewer for the Duke Datathon, 2021

Bayesian Young Statisticians Meeting, organizing committee, 2021

Bayesian Young Statisticians Meeting: Online, organizing and scientific committee, 2020

ASA DataFest@Duke, VIP Consultant, 2015 – 2017

Graduate Consultative Committee, 2015 – 2016
Duke University, Department of Statistical Science

Journal reviews: Electronic Journal of Statistics, Bayesian Analysis, Frontiers in Applied Mathematics and Statistics, Journal of Computational and Graphical Statistics, Journal of the Korean Statistical Society, SIAM/ASA Journal on Uncertainty Quantification, Stat, Statistical Methods in Medical Research, Statistics and Computing

Postdoc supervision	Fang Qian, 2022 – 2024
Summer research supervision	Madhumitha Ayyappan, 2020 Jia Tang, 2020
Capstone supervision	Ahmed Elsayed Gobba, 2019 – 2020 Haroun Chahed, 2019 – 2020 Sunwoo Nam, 2019 – 2020
Independent study supervision	Callie Mao, 2015 – 2016 Gic-Owens Fiestan, 2015 – 2016
Software	Programming languages: Python, R and C++ github.com/willemvandenboom van den Boom, W. (2018) <code>xwf</code> : An R package for extrema-weighted feature extraction for varying length functional data.
Professional affiliations	International Society for Bayesian Analysis International Statistical Institute