I have several scientific contributions [Hocking, 2019, Jewell et al., 2019, Sievert et al., 2019, Hocking et al., 2020, Fotoohinasab et al., 2020a,b, Hocking and Bourque, 2020, Abraham et al., 2021, Fotoohinasab et al., 2021, Hocking, 2021, Liehrmann et al., 2021, Kolla et al., 2021, Barnwal et al., 2022, Chaves et al., 2022, Hocking et al., 2022b, Mihaljevic et al., 2022, Vargovich and Hocking, 2022, Hocking, 2022, Barr et al., 2022a,b, Hocking et al., 2022a, Harshe et al., 2023, Hillman and Hocking, 2023, Hocking and Srivastava, 2023, Runge et al., 2023, Tao et al., 2023, Sweeney et al., 2023, Agyapong et al., 2023, Hocking, 2023, Rust and Hocking, 2023, Bodine et al., 2024a, Kaufman et al., 2024, Tao et al., 2024, Fowler and Hocking, 2024, Gurney et al., 2024, Sutherland et al., 2024, Hocking, 2024a,b,c,d, Bodine et al., 2024b, Nguyen and Hocking, 2024, Thibault et al., 2024, Truong and Hocking, 2024].

References

A. J. Abraham, T. O. Prys-Jones, A. De Cuyper, C. Ridenour, G. P. Hempson, T. Hocking, M. Clauss, and C. E. Doughty. Improved estimation of gut passage time considerably affects trait-based dispersal models. *Functional Ecology*, 35(4):860–869, 2021. doi: 10.1111/1365-2435.13726.

D. Agyapong, J. R. Propster, J. Marks, and T. D. Hocking. Cross-validation for training and testing co-occurrence network inference algorithms. Preprint arXiv:2309.15225, under review at BMC Bioinformatics, 2023.

A. Barnwal, H. Cho, and T. Hocking. Survival regression with accelerated failure time model in xgboost. *Journal of Computational and Graphical Statistics*, 31(4):1292–1302, 2022. doi: 10.1080/10618600.2022.2067548.

J. R. Barr, T. D. Hocking, G. Morton, T. Thatcher, and P. Shaw. Classifying imbalanced data with aum loss. In *2022 Fourth International Conference on Transdisciplinary AI (TransAI)*, pages 135–141. IEEE, 2022a.

J. R. Barr, P. Shaw, F. N. Abu-Khzam, T. Thatcher, and T. D. Hocking. Graph embedding: A methodological survey. In *2022 fourth international conference on transdisciplinary AI (TransAI)*, pages 142–148. IEEE, 2022b.

C. S. Bodine, D. Buscombe, and T. D. Hocking. Automated river substrate mapping from sonar imagery with machine learning. *Journal of Geophysical Research: Machine Learning and Computation*, 1(3), 2024a. doi: 10.1029/2024JH000135. e2024JH000135.

C. S. Bodine, G. Thibault, P. N. Arellano, A. F. Shenkin, O. Lindly, and T. D. Hocking. Soak: Same/other/all k-fold cross-validation for estimating similarity of patterns in data subsets. In progress, 2024b.

A. P. Chaves, J. Egbert, T. Hocking, E. Doerry, and M. A. Gerosa. Chatbots language design: The influence of language variation on user experience with tourist assistant chatbots. *ACM Trans. Comput.-Hum. Interact.*, 29(2), jan 2022. ISSN 1073-0516. doi: 10.1145/3487193.

A. Fotoohinasab, T. Hocking, and F. Afghah. A graph-constrained changepoint learning approach for automatic qrs-complex detection. In *2020 54th Asilomar Conference on Signals, Systems, and Computers*, pages 950–954, 2020a. doi: 10.1109/IEEECONF51394.2020.9443307.

A. Fotoohinasab, T. Hocking, and F. Afghah. A graph-constrained changepoint detection approach for ecg segmentation. In *2020 42nd Annual International Conference of the IEEE Engineering in Medicine Biology Society (EMBC)*, pages 332–336, 2020b. doi: 10.1109/EMBC44109.2020.9175333.

A. Fotoohinasab, T. Hocking, and F. Afghah. A greedy graph search algorithm based on changepoint analysis for automatic qrs complex detection. *Computers in Biology and Medicine*, 130:104208, 2021. ISSN 0010-4825. doi: 10.1016/j.compbiomed.2021.104208. URL https://www.sciencedirect.com/science/article/pii/S0010482521000020.

J. Fowler and T. D. Hocking. Efficient line search for optimizing area under the roc curve in gradient descent. In progress, 2024.

K. Gurney, B. Aslam, P. Dass, L. Gawuc, T. D. Hocking, J. J. Barber, and A. Kato. Assessment of the climate trace global powerplant co2 emissions. Under review at Environmental Research Letters, 2024.

K. Harshe, J. R. Williams, T. D. Hocking, and Z. F. Lerner. Predicting neuromuscular engagement to improve gait training with a robotic ankle exoskeleton. *IEEE Robotics and Automation Letters*, 8(8): 5055–5060, 2023. doi: 10.1109/LRA.2023.3291919.

J. Hillman and T. D. Hocking. Optimizing roc curves with a sort-based surrogate loss for binary classification and changepoint detection. *Journal of Machine Learning Research*, 24(70):1–24, 2023. URL http://jmlr.org/papers/v24/21-0751.html.

T. D. Hocking. Comparing namedCapture with other R packages for regular expressions. *The R Journal*, 11(2):328–346, 2019. doi: 10.32614/RJ-2019-050.

T. D. Hocking. Wide-to-tall Data Reshaping Using Regular Expressions and the nc Package. *The R Journal*, 13(1):69–82, 2021. doi: 10.32614/RJ-2021-029.

T. D. Hocking. Introduction to machine learning and neural networks. In Y. Luo, editor, *Land Carbon Cycle Modeling: Matrix Approach, Data Assimilation, and Ecological Forecasting*, chapter 36. Taylor and Francis, 2022.

T. D. Hocking. Why does functional pruning yield such fast algorithms for optimal changepoint detection? In progress, 2023.

T. D. Hocking. Comparing binsegrcpp with other implementations of binary segmentation for changepoint detection. In progress, 2024a.

T. D. Hocking. Finite sample complexity analysis of binary segmentation. In progress, 2024b.

T. D. Hocking. Teaching hidden markov models using interactive data visualization. In progress, 2024c.

T. D. Hocking. mlr3resampling: an r implementation of cross-validation for comparing models learned using different train subsets. In progress, 2024d.

T. D. Hocking and G. Bourque. Machine Learning Algorithms for Simultaneous Supervised Detection of Peaks in Multiple Samples and Cell Types. In *Proc. Pacific Symposium on Biocomputing*, volume 25, pages 367–378, 2020.

T. D. Hocking and A. Srivastava. Labeled optimal partitioning. *Computational Statistics*, 38:461–480, 2023. ISSN 0943-4062. doi: 10.1007/s00180-022-01238-z.

T. D. Hocking, G. Rigaill, P. Fearnhead, and G. Bourque. Constrained Dynamic Programming and Supervised Penalty Learning Algorithms for Peak Detection in Genomic Data. *Journal of Machine Learning Research*, 21(87):1–40, 2020. URL http://jmlr.org/papers/v21/18-843.html.

T. D. Hocking, J. R. Barr, and T. Thatcher. Interpretable linear models for predicting security vulnerabilities in source code. In *2022 Fourth International Conference on Transdisciplinary AI (TransAI)*, pages 149–155. IEEE, 2022a.

T. D. Hocking, G. Rigaill, P. Fearnhead, and G. Bourque. Generalized functional pruning optimal partitioning (gfpop) for constrained changepoint detection in genomic data. *Journal of Statistical Software*, 101(10):1–31, 2022b. doi: 10.18637/jss.v101.i10. URL https://www.jstatsoft.org/index.php/jss/article/view/v101i10.

S. W. Jewell, T. D. Hocking, P. Fearnhead, and D. M. Witten. Fast nonconvex deconvolution of calcium imaging data. *Biostatistics*, 21(4):709–726, 02 2019. ISSN 1465-4644. doi: 10.1093/biostatistics/kxy083.

J. M. Kaufman, A. J. Stenberg, and T. D. Hocking. Functional labeled optimal partitioning. *Journal of Computational and Graphical Statistics*, pages 1–8, 2024. doi: 10.1080/10618600.2023.2293216.

A. C. Kolla, A. Groce, and T. D. Hocking. Fuzz testing the compiled code in r packages. In *2021 IEEE 32nd International Symposium on Software Reliability Engineering (ISSRE)*, pages 300–308, 2021. doi: 10.1109/ISSRE52982.2021.00040.

A. Liehrmann, G. Rigaill, and T. D. Hocking. Increased peak detection accuracy in over-dispersed ChIP-seq data with supervised segmentation models. *BMC Bioinformatics*, 22(323), 2021.

J. R. Mihaljevic, S. Borkovec, S. Ratnavale, T. D. Hocking, K. E. Banister, J. E. Eppinger, C. Hepp, and E. Doerry. Sparsemodr: Rapidly simulate spatially explicit and stochastic models of covid-19 and other infectious diseases. *Biology Methods and Protocols*, 7(1):bpac022, 2022.

T. Nguyen and T. Hocking. Deep learning approach for changepoint detection: Penalty parameter optimization. Preprint arXiv:2408.00856, 2024.

V. Runge, T. D. Hocking, G. Romano, F. Afghah, P. Fearnhead, and G. Rigaill. gfpop: An r package for univariate graph-constrained change-point detection. *Journal of Statistical Software*, 106(6):1–39, 2023. doi: 10.18637/jss.v106.i06. URL https://www.jstatsoft.org/index.php/jss/article/view/v106i06.

K. Rust and T. Hocking. A log-linear gradient descent algorithm for unbalanced binary classification using the all pairs squared hinge loss. Preprint arXiv:2302.11062, 2023.

C. Sievert, S. VanderPlas, J. Cai, K. Ferris, F. U. F. Khan, and T. D. Hocking. Extending ggplot2 for linked and animated web graphics. *Journal of Computational and Graphical Statistics*, 28(2):299–308, 2019.

V. Sutherland, T. D. Hocking, and O. Lindly. Interpretable machine learning algorithms for understanding factors related to childhood autism. In progress, 2024.

N. Sweeney, C. Xu, J. A. Shaw, T. D. Hocking, and B. M. Whitaker. Insect identification in pulsed lidar images using changepoint detection algorithms. In *2023 Intermountain Engineering, Technology and Computing (IETC)*, pages 93–97, 2023. doi: 10.1109/IETC57902.2023.10152205.

F. Tao, Y. Huang, B. A. Hungate, S. Manzoni, S. D. Frey, M. W. I. Schmidt, M. Reichstein, N. Carvalhais, P. Ciais, L. Jiang, J. Lehmann, U. Mishra, G. Hugelius, T. D. Hocking, X. Lu, Z. Shi, K. Viatkin, R. Vargas, Y. Yigini, C. Omuto, A. A. Malik, G. Perualta, R. Cuevas-Corona, L. E. D. Paolo, I. Luotto, C. Liao, Y.-S. Liang, V. S. Saynes, X. Huang, and Y. Luo. Microbial carbon use efficiency promotes global soil carbon storage. *Nature*, 618:981–985, 2023. DOI:10.1038/s41586-023-06042-3.

F. Tao, B. Z. Houlton, S. D. Frey, J. Lehmann, S. Manzoni, Y. Huang, L. Jiang, U. Mishra, B. A. Hungate, M. W. Schmidt, M. Reichstein, N. Carvalhais, P. Ciais, Y.-P. Wang, B. Ahrens, G. Hugelius, T. D. Hocking, X. Lu, Z. Shi, K. Viatkin, R. Vargas, Y. Yigini, C. Omuto, A. A. Malik, G. Peralta, R. Cuevas-Corona, L. E. D. Paolo, I. Luotto, C. Liao, Y.-S. Liang, V. S. Saynes, X. Huang, and Y. Luo. Reply to: Model uncertainty obscures major driver of soil carbon. *Nature*, 627(8002):E4–E6, 2024.

G. Thibault, T. D. Hocking, and A. Achim. Predicting forest burn from satellite image data. In progress, 2024.

C. Truong and T. D. Hocking. Efficient change-point detection for multivariate circular data. In progress, 2024.

J. Vargovich and T. D. Hocking. Linear time dynamic programming for computing breakpoints in the regularization path of models selected from a finite set. *Journal of Computational and Graphical Statistics*, 31(2):313–323, 2022. doi: 10.1080/10618600.2021.2000422.