

I have several scientific contributions [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68].

## References

- [1] Yannick Doyon, Jasmine M McCammon, Jeffrey C Miller, Farhoud Faraji, Catherine Ngo, George E Katibah, Rainier Amora, Toby D Hocking, Lei Zhang, Edward J Rebar, Philip D Gregory, Fyodor D Urnov, and Sharon L Amacher. Heritable targeted gene disruption in zebrafish using designed zinc-finger nucleases. *Nature biotechnology*, 26(6):702–708, 2008.
- [2] Mathieu Gautier, Toby Dylan Hocking, and Jean-Louis Foulley. A bayesian outlier criterion to detect snps under selection in large data sets. *PLoS one*, 5(8):e11913, 2010.
- [3] Toby Dylan Hocking, Armand Joulin, Francis Bach, and Jean-Philippe Vert. Clusterpath an algorithm for clustering using convex fusion penalties. In *28th international conference on machine learning*, page 1, 2011.
- [4] Toby Dylan Hocking. *Learning algorithms and statistical software, with applications to bioinformatics*. PhD thesis, Ecole normale supérieure de Cachan, 2012.
- [5] Toby Dylan Hocking, Gudrun Schleiermacher, Isabelle Janoueix-Lerosey, Valentina Boeva, Julie Cappel, Oliver Delattre, Francis Bach, and Jean-Philippe Vert. Learning smoothing models of copy number profiles using breakpoint annotations. *BMC Bioinformatics*, 14(164), May 2013.
- [6] Toby Dylan Hocking, Thomas Wutzler, Keith Ponting, and Philippe Grosjean. Sustainable, extensible documentation generation using inlinedocs. *Journal of Statistical Software*, 54:1–20, 2013.
- [7] Guillem Rigaill, Toby Hocking, Jean-Philippe Vert, and Francis Bach. Learning sparse penalties for change-point detection using max margin interval regression. In *Proc. 30th ICML*, pages 172–180, 2013.
- [8] TD Hocking, V Boeva, G Rigaill, G Schleiermacher, I Janoueix-Lerosey, O Delattre, W Richer, F Bourdeaut, M Suguro, M Seto, F Bach, and JP Vert. SegAnnDB: interactive web-based genomic segmentation. *Bioinformatics*, 30(11):1539–46, 2014.
- [9] M. Suguro, N. Yoshida, A. Umino, H. Kato, H. Tagawa, M. Nakagawa, N. Fukuhara, S. Karnan, I. Takeuchi, T. D. Hocking, K. Arita, K. Karube, S. Tsuzuki, S. Nakamura, T. Kinoshita, and M. Seto. Clonal heterogeneity of lymphoid malignancies correlates with poor prognosis. *Cancer Sci*, 105(7):897–904, Jul 2014.
- [10] D Venuto, Toby Dylan Hocking, L Sphanurattana, and M Sugiyama. Support vector comparison machines. Preprint arXiv:1401.8008, 2014.
- [11] Toby Dylan Hocking, Guillem Rigaill, and Guillaume Bourque. PeakSeg: constrained optimal segmentation and supervised penalty learning for peak detection in count data. In *Proc. 32nd ICML*, pages 324–332, 2015.
- [12] Toby Dylan Hocking. A breakpoint detection error function for segmentation model selection and validation. Preprint arXiv:1509.00368, 2015.
- [13] Mathieu Chicard, Sandrine Boyault, Leo Colmet Daage, Wilfrid Richer, David Gentien, Gaëlle Pierron, Eve Lapouble, Angela Bellini, Nathalie Clement, Isabelle Iacono, Stéphanie Bréjon, Marjorie Carrere, Cécile Reyes, Toby Hocking, Virginie Bernard, Michel Peuchmaur, Nadège Corradini, Cécile Faure-Conter, Carole Coze, Dominique Plantaz, Anne Sophie Defachelles, Estelle Thebaud, Marion Gambart, Frédéric Millot, Dominique Valteau-Couanet, Jean Michon, Alain Puisieux, Olivier Delattre, Valérie

- Combaret, and Gudrun Schleiermacher. Genomic Copy Number Profiling Using Circulating Free Tumor DNA Highlights Heterogeneity in Neuroblastoma. *Clinical Cancer Research*, 22(22):5564–5573, 11 2016.
- [14] K. Shimada, S. Shimada, K. Sugimoto, M. Nakatochi, M. Suguro, A. Hirakawa, T. D. Hocking, I. Takeuchi, T. Tokunaga, Y. Takagi, A. Sakamoto, T. Aoki, T. Naoe, S. Nakamura, F. Hayakawa, M. Seto, A. Tomita, and H. Kiyoi. Development and analysis of patient-derived xenograft mouse models in intravascular large B-cell lymphoma. *Leukemia*, 30(7):1568–1579, 07 2016.
  - [15] Toby Dylan Hocking and Claus Thorn Ekstrøm. Understanding and creating interactive graphics. Tutorial at international useR 2016 conference, textbook in progress, 2016.
  - [16] Toby Dylan Hocking, Patricia Goerner-Potvin, Andreanne Morin, Xiaojian Shao, Tomi Pastinen, and Guillaume Bourque. Optimizing ChIP-seq peak detectors using visual labels and supervised machine learning. *Bioinformatics*, 33(4):491–499, 11 2017.
  - [17] Robert Maidstone, Toby Hocking, Guillem Rigall, and Paul Fearnhead. On optimal multiple change-point algorithms for large data. *Statistics and Computing*, 27:519–533, 2017.
  - [18] Alexandre Drouin, Toby Hocking, and Francois Laviolette. Maximum margin interval trees. In I. Guyon, U. V. Luxburg, S. Bengio, H. Wallach, R. Fergus, S. Vishwanathan, and R. Garnett, editors, *Advances in Neural Information Processing Systems 30*, pages 4947–4956. Curran Associates, Inc., 2017.
  - [19] Toby Dylan Hocking and Rebecca Killick. Introduction to optimal changepoint detection algorithms. Tutorial at international useR 2017 conference, textbook in progress, 2017.
  - [20] Najmeh Alirezaie, Kristin D. Kernohan, Taila Hartley, Jacek Majewski, and Toby Dylan Hocking. Clinpred: Prediction tool to identify disease-relevant nonsynonymous single-nucleotide variants. *The American Journal of Human Genetics*, 103(4):474–483, 2018.
  - [21] Pauline Depuydt, Valentina Boeva, Toby D Hocking, Robrecht Cannoodt, Inge M Ambros, Peter F Ambros, Shahab Asgharzadeh, Edward F Attiyeh, Valérie Combaret, Raffaella Defferrari, Matthias Fischer, Barbara Hero, Michael D Hogarty, Meredith S Irwin, Jan Koster, Susan Kreissman, Ruth Ladenstein, Eve Lapouble, Geneviève Laureys, Wendy B London, Katia Mazzocco, Akira Nakagawara, Rosa Noguera, Miki Ohira, Julie R Park, Ulrike Pötschger, Jessica Theissen, Gian Paolo Tonini, Dominique Valteau-Couanet, Luigi Varesio, Rogier Versteeg, Frank Speleman, John M Maris, Gudrun Schleiermacher, and Katleen De Preter. Genomic amplifications and distal 6q loss: novel markers for poor survival in high-risk neuroblastoma patients. *JNCI: Journal of the National Cancer Institute*, 110(10):1084–1093, 2018.
  - [22] Pauline Depuydt, Jan Koster, Valentina Boeva, Toby D Hocking, Frank Speleman, Gudrun Schleiermacher, and Katleen De Preter. Meta-mining of copy number profiles of high-risk neuroblastoma tumors. *Scientific data*, 5(1):1–9, 2018.
  - [23] Toby Dylan Hocking. Comparing namedCapture with other R packages for regular expressions. *The R Journal*, 11(2):328–346, 2019.
  - [24] Sean W Jewell, Toby Dylan Hocking, Paul Fearnhead, and Daniela M Witten. Fast nonconvex deconvolution of calcium imaging data. *Biostatistics*, 21(4):709–726, 02 2019.
  - [25] Carson Sievert, Susan VanderPlas, Jun Cai, Kevin Ferris, Faizan Uddin Fahad Khan, and Toby Dylan Hocking. Extending ggplot2 for linked and animated web graphics. *Journal of Computational and Graphical Statistics*, 28(2):299–308, 2019.
  - [26] Toby Dylan Hocking, Guillem Rigall, Paul Fearnhead, and Guillaume 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.

- [27] Atiyeh Fotoohinasab, Toby Hocking, and Fatemeh 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, 2020.
- [28] Atiyeh Fotoohinasab, Toby Hocking, and Fatemeh 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, 2020.
- [29] Toby Dylan Hocking and Guillaume 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.
- [30] Andrew J. Abraham, Tomos O. Prys-Jones, Annelies De Cuyper, Chase Ridenour, Gareth P. Hempson, Toby Hocking, Marcus Clauss, and Christopher E. Doughty. Improved estimation of gut passage time considerably affects trait-based dispersal models. *Functional Ecology*, 35(4):860–869, 2021.
- [31] Atiyeh Fotoohinasab, Toby Hocking, and Fatemeh Afghah. A greedy graph search algorithm based on changepoint analysis for automatic qrs complex detection. *Computers in Biology and Medicine*, 130:104208, 2021.
- [32] Toby Dylan Hocking. Wide-to-tall Data Reshaping Using Regular Expressions and the nc Package. *The R Journal*, 13(1):69–82, 2021.
- [33] Arnaud Liehrmann, Guillem Rigai, and Toby Dylan Hocking. Increased peak detection accuracy in over-dispersed ChIP-seq data with supervised segmentation models. *BMC Bioinformatics*, 22(323), 2021.
- [34] Akhila Chowdary Kolla, Alex Groce, and Toby Dylan Hocking. Fuzz testing the compiled code in r packages. In *2021 IEEE 32nd International Symposium on Software Reliability Engineering (ISSRE)*, pages 300–308, 2021.
- [35] Avinash Barnwal, Hyunsu Cho, and Toby Hocking. Survival regression with accelerated failure time model in xgboost. *Journal of Computational and Graphical Statistics*, 31(4):1292–1302, 2022.
- [36] Ana Paula Chaves, Jesse Egbert, Toby Hocking, Eck Doerry, and Marco Aurelio 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.
- [37] Toby Dylan Hocking, Guillem Rigai, Paul Fearnhead, and Guillaume Bourque. Generalized functional pruning optimal partitioning (gfpop) for constrained changepoint detection in genomic data. *Journal of Statistical Software*, 101(10):1–31, 2022.
- [38] Joseph R Mihaljevic, Seth Borkovec, Saikanth Ratnavale, Toby D Hocking, Kelsey E Banister, Joseph E Eppinger, Crystal Hepp, and Eck Doerry. Sparsemodr: Rapidly simulate spatially explicit and stochastic models of covid-19 and other infectious diseases. *Biology Methods and Protocols*, 7(1):bpac022, 2022.
- [39] Joseph Vargovich and Toby Dylan 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.
- [40] Toby Dylan Hocking. Introduction to machine learning and neural networks. In Yiqi Luo, editor, *Land Carbon Cycle Modeling: Matrix Approach, Data Assimilation, and Ecological Forecasting*, chapter 36. CRC Press, 2022.
- [41] Joseph R Barr, Toby D Hocking, Garinn Morton, Tyler Thatcher, and Peter Shaw. Classifying imbalanced data with AUM loss. In *2022 Fourth International Conference on Transdisciplinary AI (TransAI)*, pages 135–141. IEEE, 2022.

- [42] Joseph R Barr, Peter Shaw, Faisal N Abu-Khzam, Tyler Thatcher, and Toby Dylan Hocking. Graph embedding: A methodological survey. In *2022 fourth international conference on transdisciplinary AI (TransAI)*, pages 142–148. IEEE, 2022.
- [43] Toby D Hocking, Joseph R Barr, and Tyler Thatcher. Interpretable linear models for predicting security vulnerabilities in source code. In *2022 Fourth International Conference on Transdisciplinary AI (TransAI)*, pages 149–155. IEEE, 2022.
- [44] Karl Harshe, Jack R. Williams, Toby D. Hocking, and Zachary F. Lerner. Predicting neuromuscular engagement to improve gait training with a robotic ankle exoskeleton. *IEEE Robotics and Automation Letters*, 8(8):5055–5060, 2023.
- [45] Jonathan Hillman and Toby Dylan 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.
- [46] Toby Dylan Hocking and Anuraag Srivastava. Labeled optimal partitioning. *Computational Statistics*, 38:461–480, 2023.
- [47] Vincent Runge, Toby Dylan Hocking, Gaetano Romano, Fatemeh Afghah, Paul Fearnhead, and Guillem Rigall. gfpop: An r package for univariate graph-constrained change-point detection. *Journal of Statistical Software*, 106(6):1–39, 2023.
- [48] Feng Tao, Yuanyuan Huang, Bruce A. Hungate, Stefano Manzoni, Serita D. Frey, Michael W. I. Schmidt, Markus Reichstein, Nuno Carvalhais, Philippe Ciais, Lifen Jiang, Johannes Lehmann, Umakant Mishra, Gustaf Hugelius, Toby D. Hocking, Xingjie Lu, Zheng Shi, Kostiantyn Viatkin, Ronald Vargas, Yusuf Yigini, Christian Omuto, Ashish A. Malik, Guillermo Perualta, Rosa Cuevas-Corona, Luciano E. Di Paolo, Isabel Luotto, Cuijuan Liao, Yi-Shuang Liang, Vinisa S. Saynes, Xiaomeng Huang, and Yiqi Luo. Microbial carbon use efficiency promotes global soil carbon storage. *Nature*, 618:981–985, 2023. DOI:10.1038/s41586-023-06042-3.
- [49] Nathaniel Sweeney, Caroline Xu, Joseph A. Shaw, Toby D. Hocking, and Bradley M. Whitaker. Insect identification in pulsed lidar images using changepoint detection algorithms. In *2023 Intermountain Engineering, Technology and Computing (IETC)*, pages 93–97, 2023.
- [50] Toby Dylan Hocking. Why does functional pruning yield such fast algorithms for optimal changepoint detection? In progress, 2023.
- [51] KR Rust and TD Hocking. A log-linear gradient descent algorithm for unbalanced binary classification using the all pairs squared hinge loss. Preprint arXiv:2302.11062, under review at Journal of Machine Learning Research, 2023.
- [52] 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), 2024. e2024JH000135.
- [53] Kevin R Gurney, Bilal Aslam, Pawlok Dass, Lech Gawuc, Toby Dylan Hocking, Jarrett J Barber, and Anna Kato. Assessment of the climate trace global powerplant co2 emissions. *Environmental Research Letters*, 19(11):114062, oct 2024.
- [54] Jacob M Kaufman, Alyssa J Stenberg, and Toby D Hocking. Functional labeled optimal partitioning. *Journal of Computational and Graphical Statistics*, pages 1–8, 2024.
- [55] Feng Tao, Benjamin Z Houlton, Serita D Frey, Johannes Lehmann, Stefano Manzoni, Yuanyuan Huang, Lifen Jiang, Umakant Mishra, Bruce A Hungate, Michael WI Schmidt, Markus Reichstein, Nuno Carvalhais, Philippe Ciais, Ying-Ping Wang, Bernhard Ahrens, Gustaf Hugelius, Toby D. Hocking, Xingjie

- Lu, Zheng Shi, Kostiantyn Viatkin, Ronald Vargas, Yusuf Yigini, Christian Omuto, Ashish A. Malik, Guillermo Peralta, Rosa Cuevas-Corona, Luciano E. Di Paolo, Isabel Luotto, Cuijuan Liao, Yi-Shuang Liang, Vinisa S. Saynes, Xiaomeng Huang, and Yiqi Luo. Reply to: Model uncertainty obscures major driver of soil carbon. *Nature*, 627(8002):E4–E6, 2024.
- [56] Jadon Fowler and Toby Dylan Hocking. Efficient line search for optimizing area under the ROC curve in gradient descent. Preprint arXiv:2410.08635, under review at Statistics and Computing, 2024.
  - [57] Vincent Sutherland, Toby Dylan Hocking, and Olivia Lindly. Interpretable machine learning algorithms for understanding factors related to childhood autism. In progress, 2024.
  - [58] Toby Dylan Hocking. Comparing binsegcpp with other implementations of binary segmentation for changepoint detection. In progress, 2024.
  - [59] Toby Dylan Hocking. Finite sample complexity analysis of binary segmentation. Preprint arXiv:2410.08654, under review at Canadian Journal of Statistics, 2024.
  - [60] Toby Dylan Hocking. Teaching hidden markov models using interactive data visualization. In progress, 2024.
  - [61] Toby Dylan Hocking. mlr3resampling: an r implementation of cross-validation for comparing models learned using different train subsets. In progress, 2024.
  - [62] Cameron Scott Bodine, Gabrielle Thibault, Paul Nelson Arellano, Alexander F Shenkin, Olivia Lindly, and Toby Dylan Hocking. SOAK: Same/Other/All K-fold cross-validation for estimating similarity of patterns in data subsets. Preprint arXiv:2410.08643, under review at Statistical Analysis and Data Mining, 2024.
  - [63] TL Nguyen and TD Hocking. Penalty learning for optimal partitioning through deep learning techniques. Preprint arXiv:2408.00856, under review at Computational Statistics, 2024.
  - [64] Gabrielle Thibault, Alexandre Morin-Bernard, Jean-Daniel Sylvain, Guillaume Drolet, Jean-Romain Roussel, Toby Dylan Hocking, and Alexis Achim. Spatial characterization of burn severity in a boreal forest using high-resolution satellite imagery. Under review at International Journal of Applied Earth Observation and Geoinformation, 2024.
  - [65] Charles Truong and Toby Dylan Hocking. Efficient change-point detection for multivariate circular data. In progress, 2024.
  - [66] Daniel Agyapong, Jeff R Propster, Jane Marks, and Toby Dylan Hocking. Cross-validation for training and testing co-occurrence network inference algorithms. *BMC Bioinformatics*, 26(74), 2025. Preprint arXiv:2309.15225.
  - [67] TL Nguyen and TD Hocking. Penalty learning for optimal partitioning via automatic feature extraction. Under review at ICML, 2025.
  - [68] TL Nguyen and TD Hocking. Interval regression: A comparative study with proposed models. Preprint arXiv:2503.02011, under review at Journal of Computational and Graphical Statistics, 2025.