

From Data to Complexes:

- V. de Silva, G. Carlsson. Topological estimation using witness complexes. SPBG 4, pages 157-166, 2004.
- Zomorodian, Fast construction of the Vietoris-Rips complex. Computers & Graphics 34.3, pages 263-271, 2010.

Stability Results:

- D. Cohen-Steiner, H. Edelsbrunner, J. Harer. Stability of persistence diagrams. Discrete & Computational Geometry 37.1, pages 103-120, 2007.
- F. Chazal, D. Cohen-Steiner, M. Glisse, L. J. Guibas, S. Y. Oudot. Proximity of persistence modules and their diagrams. Proc. of the 35 annual symposium on Computational Geometry, pages 237-246, 2009.
- F. Chazal, D. Cohen-Steiner, L. J. Guibas, F. Méholi, S. Y. Oudot. Gromov-Hausdorff stable signatures for shapes using persistence. Computer Graphics Forum 28.5, pages 1393-1403, 2009.

Simplicial Structure, Dynamics, Link Prediction:

- Mukherjee S, Steenbergen J. Random walks on simplicial complexes and harmonics. Random structures & algorithms, 49(2), 379-405, 2016.
- Schaub MT, Benson AR, Horn P, Lippner G, Jadbabaie A. Random Walks on Simplicial Complexes and the normalized Hodge Laplacian. arXiv preprint arXiv:1807.05044, 2018.
- Patania A, Petri G, Vaccarino F. The shape of collaborations. EPJ Data Science. 1;6(1):18, 2017.
- Iacopini I, Petri G, Barrat A, Latora V. Simplicial models of social contagion. arXiv preprint arXiv:1810.07031, 2018.
- Taylor D, Klimm F, Harrington HA, Kramár M, Mischaikow K, Porter MA, Mucha PJ. Topological data analysis of contagion maps for examining spreading processes on networks. Nature communications. 6:7723, 2015.
- Tran QH, Vo VT, Hasegawa Y. Scale-variant topological information for characterizing complex networks. arXiv preprint arXiv:1811.03573, 2018.
- Hajij M, Wang B, Scheidegger C, Rosen P. Visual Detection of Structural Changes in Time-Varying Graphs Using Persistent Homology. Pacific Visualization Symposium (PacificVis), 2018.
- Petri G, Scolamiero M, Donato I, Vaccarino F. Topological strata of weighted complex networks. PloS one. 21; 8(6):e66506, 2013.

Mapper:

- Singh G, Méholi F, Carlsson GE. Topological methods for the analysis of high dimensional data sets and 3d object recognition. SPBG, pp. 91-100, 2007.
- Sindhvani V, Ghoting A, Ting E, Lawrence R. Extracting insights from social media with large-scale matrix approximations. IBM Journal of Research and Development. 55(5):9-1, 2011.

- Patania A, Selvaggi P, Veronese M, Di Pasquale O, Expert P, Petri G. Topological gene-expression networks recapitulate brain anatomy and function. *bioRxiv*, 1:476382, 2018.
- Nicolau M, Levine AJ, Carlsson G. Topology based data analysis identifies a subgroup of breast cancers with a unique mutational profile and excellent survival. *Proceedings of the National Academy of Sciences*. 8:201102826, 2011.
- Rizvi AH, Camara PG, Kandror EK, Roberts TJ, Schieren I, Maniatis T, Rabadan R. Single-cell topological RNA-seq analysis reveals insights into cellular differentiation and development. *Nature biotechnology*. 35(6):551, 2017.
- Saggar M, Sporns O, Gonzalez-Castillo J, Bandettini PA, Carlsson G, Glover G, Reiss AL. Towards a new approach to reveal dynamical organization of the brain using topological data analysis. *Nature communications*. 9(1):1399, 2018.
- Gabrielsson RB, Carlsson G. A look at the topology of convolutional neural networks. *arXiv preprint arXiv:1810.03234*, 2018.

Brain Networks:

- Petri G, Expert P, Turkheimer F, Carhart-Harris R, Nutt D, Hellyer PJ, Vaccarino F. Homological scaffolds of brain functional networks. *Journal of The Royal Society Interface*, 6;11(101):20140873, 2014.
- Guerra M, De Gregorio A, Fugacci U, Petri G, Vaccarino F. Homological scaffold via minimal homology bases. *Scientific reports*, 11(1), 1-17, 2021.
- Lee H, Chung MK, Kang H, Kim BN, Lee DS. Discriminative persistent homology of brain networks. *Biomedical Imaging: From Nano to Macro, IEEE International Symposium*, pp. 841-844, 2011.
- Lee H, Kang H, Chung MK, Kim BN, Lee DS. Persistent brain network homology from the perspective of dendrogram. *IEEE transactions on medical imaging*. 31(12):2267-77, 2012.
- Sizemore AE, Giusti C, Kahn A, Vettel JM, Betzel RF, Bassett DS. Cliques and cavities in the human.
- Lord LD, Expert P, Fernandes HM, Petri G, Van Hartevelt TJ, Vaccarino F, Deco G, Turkheimer F, Kringelbach ML. Insights into brain architectures from the homological scaffolds of functional connectivity networks. *Frontiers in systems neuroscience*, 10:85, 2016.
- Ibanez-Marcelo E, Campioni L, Phinyomark A, Petri G, Santarcangelo EL. Topology highlights mesoscopic functional equivalence between imagery and perception. *bioRxiv*, 1:268383, 2018.

Kernels:

- P. Donatini, P. Frosini, A. Lovato. Size functions for signature recognition. *Proc. of SPIE*, 3454, pages 178-183, 1998.
- M. Ferri, P. Frosini, A. Lovato, C. Zambelli. Point selection: a new comparison scheme for size functions. *Proc. 3rd Asian Conference on Computer Vision*, vol. I, pages 329-337, 1998.
- P. Bubenik. Statistical topological data analysis using persistence landscapes. *Journal of Machine Learning Research*, 16.1, pages 77-102, 2015.
- J. Reininghaus, S. Huber, U. Bauer, R. Kwitt. A stable multi-scale kernel for topological machine learning. *Proc. of IEEE Conference on Computer Vision and Pattern Recognition*, pages 4741-4748, 2015.

- G. Kusano, Y. Hiraoka, K. Fukumizu. Persistence weighted Gaussian kernel for topological data analysis. International Conference on Machine Learning, pages 2004-2013, 2016.
- M. Carrière, M. Cuturi, S. Oudot. Sliced Wasserstein kernel for persistence diagrams. Proc. of the 34th International Conference on Machine Learning, 70, pages 664-673, 2017.
- H. Adams et al. Persistence images: a stable vector representation of persistent homology. Journal of Machine Learning Research, 18.1, pages 218-252, 2017.

Complex Networks:

- G. Palla, I. Derényi, I. Farkas, T. Vicsek. Uncovering the overlapping community structure of complex networks in nature and society. Nature, 435.7043, pages 814-818, 2005.
- S. Fortunato. Community detection in graphs. Physics Reports, 486(3-5), pages 75-174, 2010.
- J. Scott. Social network analysis. SAGE Publications Ltd, 2017.
- M. Newman. Networks. Oxford university press, 2018.
- B. Rieck, U. Fugacci, J. Lukasczyk, H. Leitte. Clique community persistence: a topological visual analysis approach for complex networks. IEEE Transactions on Visualization and Computer Graphics, 24.1, pages 822-831, 2018.

Multi-Parameter Persistent Homology:

- Carlsson, G., & Zomorodian, A. The theory of multidimensional persistence. Discrete & Computational Geometry, 42(1), 71-93, 2009.
- Carlsson, G., Singh, G., & Zomorodian, A. Computing multidimensional persistence. In International Symposium on Algorithms and Computation (pp. 730-739). Springer, Berlin, Heidelberg, 2009.
- Kerber, M., Lesnick, M., & Oudot, S. Exact computation of the matching distance on 2-parameter persistence modules. arXiv preprint arXiv:1812.09085, 2018.
- Dey, T. K., & Xin, C. Computing bottleneck distance for 2-d interval decomposable modules. In 34th International Symposium on Computational Geometry (SoCG 2018). Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik, 2018.
- Bjerkevik, H. B., Botnan, M. B., & Kerber, M. Computing the interleaving distance is NP-hard. Foundations of Computational Mathematics, 1-35, 2019.
- Biasotti, S., Cerri, A., Frosini, P., & Giorgi, D. A new algorithm for computing the 2-dimensional matching distance between size functions. Pattern Recognition Letters, 32(14), 1735-1746, 2011.
- Cerri, A., Fabio, B. D., Ferri, M., Frosini, P., & Landi, C. Betti numbers in multidimensional persistent homology are stable functions. Mathematical Methods in the Applied Sciences, 36(12), 1543-1557, 2013.
- Fugacci, U., & Kerber, M. Chunk Reduction for Multi-Parameter Persistent Homology. arXiv preprint arXiv:1812.08580, 2018.

Persistent Homology Computation:

- Milosavljević, N., Morozov, D., & Skraba, P. Zigzag persistent homology in matrix multiplication time. In Proceedings of the twenty-seventh annual symposium on Computational geometry (pp. 216-225), 2011.

- Chen, C., & Kerber, M. Persistent homology computation with a twist. In Proceedings 27th European Workshop on Computational Geometry (Vol. 11, pp. 197-200), 2011.
- De Silva, V., Morozov, D., & Vejdemo-Johansson, M. Dualities in persistent (co) homology. *Inverse Problems*, 27(12), 124003, 2011.
- Chen, C., & Kerber, M. An output-sensitive algorithm for persistent homology. *Computational Geometry*, 46(4), 435-447, 2013.
- Boissonnat, J. D., & Maria, C. Computing persistent homology with various coefficient fields in a single pass. In *European Symposium on Algorithms* (pp. 185-196). Springer, Berlin, Heidelberg, 2014.
- Boissonnat, J. D., Dey, T. K., & Maria, C. The compressed annotation matrix: An efficient data structure for computing persistent cohomology. In *European Symposium on Algorithms* (pp. 695-706). Springer, Berlin, Heidelberg, 2013.
- Dey, T. K., Fan, F., & Wang, Y. Computing topological persistence for simplicial maps. In *Proceedings of the thirtieth annual symposium on Computational geometry* (pp. 345-354), 2014.
- Lipsky, D., Skraba, P., & Vejdemo-Johansson, M. A spectral sequence for parallelized persistence. *arXiv preprint arXiv:1112.1245*, 2011.
- Boltcheva, D., Aceitunos, S. M., Léon, J. C., & Hétry, F. Constructive Mayer-Vietoris algorithm: computing the homology of unions of simplicial complexes, 2010.
- Murty, N. A., Natarajan, V., & Vadhiyar, S. Efficient homology computations on multicore and manycore systems. *20th Annual International Conference on High Performance Computing* (pp. 333-342), 2013.
- Lewis, R. H., & Zomorodian, A. Multicore homology, 2012.
- Bauer, U., Kerber, M., & Reininghaus, J. Clear and compress: Computing persistent homology in chunks. In *Topological methods in data analysis and visualization III* (pp. 103-117). Springer, Cham, 2014.
- Bauer, U., Kerber, M., & Reininghaus, J. Distributed computation of persistent homology. *Proceedings of the sixteenth workshop on algorithm engineering and experiments (ALENEX)* (pp. 31-38). Society for Industrial and Applied Mathematics, 2014.
- P. Brendel, P. Dłotko, M. Mrozek, and N. Zelazna. Homology computations via acyclic subspace. *Proceedings of the 4th international conference on Computational Topology in Image Context, CTIC'12*, pages 117–127, Berlin, Heidelberg, Springer Verlag. 2012.
- P. Dłotko, H. Wagner, et al. Simplification of complexes for persistent homology computations. *Homology, Homotopy and Applications*, 16(1):49–63, 2014.
- M. Mrozek and B. Batko. Coredution homology algorithm. *Discrete & Computational Geometry*, 41(1):96–118, 2009.
- V. Robins, P. J. Wood, and A. P. Sheppard. Theory and algorithms for constructing discrete Morse complexes from grayscale digital images. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 33(8):1646– 1658, 2011.
- S. Harker, K. Mischaikow, M. Mrozek, and V. Nanda. Discrete Morse theoretic algorithms for computing homology of complexes and maps. *Foundations of Computational Mathematics*, 14(1):151–184, 2014.
- U. Fugacci, F. Iuricich, and L. De Floriani. Efficient computation of simplicial homology through acyclic matching. In *Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*, 2014 16th International Symposium on, pages 587–593, 2014.

Data Structures for Arbitrary Simplicial Complexes:

- Boissonnat, Maria. The Simplex Tree: an Efficient Data Structure for General Simplicial Complexes. *Algorithmica*, 2014.
- Canino, De Floriani, Weiss. IA*: An Adjacency-Based Representation for Non-manifold Simplicial Shapes in Arbitrary Dimensions. *Computers & Graphics*, 2011.
- Fellegara, Weiss, De Floriani. The Stellar Tree: a Compact Representation for Simplicial Complexes and Beyond. *arXiv preprint*, 2017.
- Attali, Lieutier, Salinas. Efficient Data Structure for Representing and Simplifying Simplicial Complexes in High Dimensions. *International Journal of Computational Geometry & Applications*, 2012.
- Fugacci, Iuricich, De Floriani. Computing Discrete Morse Complexes from Simplicial Complexes. *Graphical Models*, 2019.
- Fellegara, Iuricich, De Floriani, Fugacci. Efficient Homology-Preserving Simplification of High-Dimensional Simplicial Shapes. *Computer Graphics Forum*, 2019.

Miscellaneous:

- De Gregorio A, Guerra M, Scaramuccia S, Vaccarino F. Parallel decomposition of persistence modules through interval bases. *arXiv preprint arXiv:2106.11884*, 2021.
- Zomorodian A, Carlsson G. Computing persistent homology. *Discrete & Computational Geometry*. 1;33(2):249-74, 2005.
- Chan JM, Carlsson G, Rabadan R. Topology of viral evolution. *Proceedings of the National Academy of Sciences*, 29:201313480, 2013.
- Ghrist R. Barcodes: the persistent topology of data. *Bulletin of the American Mathematical Society*, 45(1):61-75, 2008.
- Sizemore A, Giusti C, Bassett DS. Classification of weighted networks through mesoscale homological features. *Journal of Complex Networks*, 4;5(2):245-73, 2016.
- Banino A, Barry C, Uria B, Blundell C, Lillicrap T, Mirowski P, Pritzel A, Chadwick MJ, Degris T, Modayil J, Wayne G. Vector-based navigation using grid-like representations in artificial agents. *Nature*, 557(7705):429, 2018.