AALBORG UNIVERSITY
DENMARK

Workshop on "Accelerating Applied Algebraic Topology"

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POSTERS

Arnur Nigmetov

'Fast Computation of Bottlenect and Wasserstein Distances'

I would like to discuss two geometric algorithms to compute the distances between persistence diagrams. Both algorithms use a very simple geometric data structure, namely, k-d trees. The algorithm for bottleneck distance is based on the work of Efrat, Itai and Katz. The algorithm for Wasserstein distance is a geometric variation of the auction algorithm by Bertsekas, which is known to be quite efficient for solving assignment problems in practice. The implementation of the algorithms significantly outperforms Dionysus library.

Magnus Bakke Botnan

Maximizing the number of intervals in a persistence diagram

We give a tight upper bound (in any dimension) on the number of intervals that can appear in the persistence diagram of a filtered flag complex. The upper bounds are realized by flag filtrations of various Turán graphs.

Marcus Ermler

Rule-Based Transformation of Cell Complexes

Rule-based transformation techniques have proven successful in string, term, or graph rewriting with applications in, for example, model transformation, functional programming, or distributed computing. In the context of cell complexes, one can find a lot of constructions that could be systematically performed in a common transformation framework. Examples for such constructions are stellar or barycentric subdivisions, quotient spaces, or homotopy equivalent transformations. In this talk, we introduce rule-based transformation techniques for cell complexes and apply them to well-known constructions and concepts.