ΠΑΝΕΠΙΣΤΗΜΙΟ ΙΩΑΝΝΙΝΩΝ

ΤΜΗΜΑ ΜΑΘΗΜΑΤΙΚΩΝ

Εβδομαδιαίο Σεμινάριο

Classification on the space of persistence diagrams

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In this talk, we consider the problem of signal classification by considering their associated persistence diagrams. We endow the data space of persistence diagrams with a new metric. In contrast with the Wasserstein distance, this metric accounts for changes in small persistence and changes in cardinality. Pulling back to the space of signals, this corresponds to detecting differences in a signal's periodicity, underlying noise, and geometry. The metric space of persistence diagrams is proved to admit statistical structure in the form of Fréchet means and variances. The new classification method using this distance is benchmarked on both synthetic data and real acoustic signals.

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