

First and second derivative in time series classification using DTW

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Abstract

In our previous work [2] we developed some new distance function based on a derivative and showed that our algorithm is efficient. In contrast to well-known measures from the literature, our approach considers the general shape of a time series rather than point-to-point function comparison. The new distance was used in classification with the nearest neighbor rule. Now, we improve on our previous technique adding second derivative. In order to provide a comprehensive comparison, we conducted a set of experiments, testing effectiveness on 20 time series data sets from a wide variety of application domains. Our experiments show that our method provides a significant higher quality of classification.

Keywords

Dynamic time warping, Derivative dynamic time warping, Data mining, Time series.

References

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