



A new strategy for monitoring spatially dependent data streams

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This paper proposes a strategy for monitoring the spatial dependence in data streams. The interest on this topic is motivated by the number of real world applications in which data collected by sensor network depends on the geographic location of each sensing device. For instance, surface air temperatures streams, are more likely to be similar when measured at nearby locations rather than if they are detected in distant places.

The strategy we propose for addressing this challenge is based on distributed processing. At each sensor it is performed a summarization of the data by means of a micro-clustering strategy for histogram data. At the central processing node, it is performed the measurement of the spatial dependence and the evaluation its evolution over time, through a new tool that we name Variogram for histogram data. We still show how this tool can be used for spatial prediction.

Keywords: data stream mining; sensor data analysis; clustering; on-line data analysis.