ID: Type: **Poster**

Time Series Classification Using Covariance Descriptors

This presentation presents a novel framework for time series classification that leverages the geometric structure of covariance matrices when labeling signals. Our method maps each signal to a new multivariate localized feature signal (MLFS) representation, from which we compute a covariance descriptor. This robust MLFS covariance representation handles classification tasks when the sample rates of the signals vary within a class and between classes. We demonstrate that the k-nearest neighbor (k-NN) method performs well in classifying the data. This is important because in the machine learning community the k-NN method of classification is one of the simplest classification algorithms. When we switch to more complicated classifiers, we expect to see an even better performance.

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Track Classification: 3. Advances in sensors, networks and processing