Analysis and Effect of Feature Selection with Generic Classifier over Activity Recognition Dataset for Daily Life Activity Recognition

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Abstract

In recent years, the convergence in sensing environments and pervasive computing has opened a scope for human activity recognition research. In this paper, we form populations from smartphone accelerometer and gyroscope sensor training-based data for Human Activity Recognition (HAR). In the same vein, we described in this work an Activity Recognition database, assembled from the recorded activities of 24 subjects doing Activities of Daily Living (ADL). The paper then aggregated this time-series data into features and subsets of features were selected using two filters based, classifier-independent feature selection methods. We used 10-fold cross-validation strategy to validate the experimentation. Evaluation of the variation of generic decision tree classifiers showed that the feature subsets bring forth acceptable performances than classification with the entire feature set resulting in productive computer overhead in the reduced feature subset. Therefore, classifier-independence feature set should be useful for developing and improving HAR systems across and within populations.

References


Index Terms
Keywords

Feature Selection, activity recognition, classification model, accelerometer, sensors.