

## Using New Machine Algorithms to Classify Iranian Musical Instruments According to Temporal, Spectral and Coefficient Features

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**Abstract :** In this paper, a study on classification of musical woodwind instruments using a small set of features selected from a broad range of extracted ones by the sequential forward selection method was carried out. Firstly, we extract 42 features for each record in the music database of 402 sound files belonging to five different groups of Flutes (end blown and internal duct), Single -reed, Double -reed (exposed and capped), Triple reed and Quadruple reed. Then, the sequential forward selection method is adopted to choose the best feature set in order to achieve very high classification accuracy. Two different classification techniques of support vector machines and relevance vector machines have been tested out and an accuracy of up to 96% can be achieved by using 21 time, frequency and coefficient features and relevance vector machine with the Gaussian kernel function.

**Keywords :** coefficient features, relevance vector machines, spectral features, support vector machines, temporal features

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