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Discrete wavelet transform in recognition human emotional movement through knocking

Abstract

Developing tools for identifying emotional states in human action is seen more challenging area of research and has attracted many researchers recently. In this paper, a new feature extraction method was proposed in identifying emotional states in human knocking. Four discrete categories of emotion such as angry, happy, neutral and sad were analyzed through human knocking and were carried out by employing Discrete Wavelet Transform (DWT) as a feature extraction method. Three different wavelet families with orders (db1, db4, Sym2, Sym5, Coif1 and Coif4) are utilized to investigate their performance in recognizing human emotional movement. Six statistical features such as mean, maximum, minimum, standard deviation, skewness and kurtosis were derived from approximation and detail coefficients at five levels of decomposition. Two different classifiers known as k- Nearest Neighbor (KNN) and Fuzzy k-Nearest Neighborhood (FkNN) was used to classify emotional movement. The experimental results demonstrate that the proposed method gives very promising classification accuracies.

Keywords — Emotion, movement, knocking, DWT, kNN, FkNN