ABSTRACT

Automatic currency note recognition invariably depends on the currency note characteristics of a particular country and the extraction of features directly affects the recognition ability. Paper currency recognition is one of the important applications of pattern recognition. A paper currency recognition system has a wide range of applications such as self receiver machines for automated teller machines and automatic good-selling machines. This research aims to present an algorithmic model for automatic classification of currency notes using $k$-Nearest Neighbor ($k$-NN) classifier. A $k$-NN rule is one of the simplest and the most important method in pattern recognition. The proposed algorithmic model is based on textural feature such as Gray Level Co-occurrence Matrix (GLCM). The recognition system is composed of four parts. The skew correction of rotated image is first. The captured image is second preprocessing by reducing data dimensionalities and the third part is extracting its features by using image processing toolbox in MATLAB. According to the GLCM, the work of texture feature extraction is finished. The last one is recognition, in which the core is $k$-Nearest Neighbor classifier. Experimental results are presented on a dataset of 500 images consisting of 5 classes of currency notes which are 100, 200, 500, 1000, and 5000 Kyat notes. It is shown that a good performance can be achieved using $k$-NN classifier algorithm. The recognition system presented in this research indicates that the proposed approach is one of the most effective strategies of identifying currency pattern to read its face value. Although either Myanmar digit or Myanmar word texture image is recognized, Myanmar paper currency amount is correctly shown. So, it is easy to count currency quickly for the staffs that work in the financial organizations and overcome from his/her serious problems, especially wrong classification.