Foreword and Editorial

International Journal of Multimedia and Ubiquitous Engineering

We are very happy to publish this issue of an International Journal of Multimedia and Ubiquitous Engineering by Science and Engineering Research Support soCiety.

This issue contains 3 articles. Achieving such a high quality of papers would have been impossible without the huge work that was undertaken by the Editorial Board members and External Reviewers. We take this opportunity to thank them for their great support and cooperation.

According to the paper entitled "A Comprehensive Analysis of Image Edge Detection Techniques", one of the important objectives of image processing is to interpret the content of image efficiently and finds the meaningful and significant information from it. The much awareness has been received from various researchers in the field of image interpretation. One of the most severe step in image interpretation is to mine the edges information from the image appropriately. Edges are the fundamental features of the image and can be formed from the outlines of the object. Edge detection is generally used in image analysis and processing. There are several types of algorithm to detect the edges. In this paper, the comprehensive analysis is done on the several edge detection techniques such as Prewitt, Sobel, Canny, Roberts and Laplacian of Gaussian. It is experimentally observed that Canny edge detector is working well than others. This work is implemented on Matlab R2015a.

The paper "Optimized Artificial Neural Network based Digital Mammogram Analysis for Breast Cancer Diagnosis" works on the detection of the breast cancer at early stage, by utilizing the mammogram images. This work pre-processes the given image by using histogram equalization to enhance the contrast of the image. Then the grey level co-occurrence matrix is used to extract the features from the image. The extracted features are reduced to the significant subset of features by using the sequential backward selection. Then, the image is classified as malignant or benign on the basis of significant subset of features by using the ANN classifier. Moreover, ANN classifier is optimized by selecting the optimized error value as stopping criteria. The result comparison and analysis on DDSM and MIAS datasets using parameters sensitivity, specificity, accuracy signifies effectiveness of the work.

Based on the study "Emotion Detection through Facial Feature Recognition", humans share a universal and fundamental set of emotions which are exhibited through consistent facial expressions. An algorithm that performs detection, extraction, and evaluation of these facial expressions will allow for automatic recognition of human emotion in images and videos. Presented here is a hybrid feature extraction and facial expression recognition method that utilizes Viola-Jones cascade object detectors and Harris corner key-points to extract faces and facial features from images and uses principal component analysis, linear discriminant analysis, histogram-of-oriented-gradients (HOG) feature extraction, and support vector machines (SVM) to train a multi-class predictor for classifying the seven fundamental human facial expressions. The hybrid approach allows for quick initial classification via projection of a testing image onto a calculated eigenvector, of a basis that has been specifically calculated to emphasize the separation of a specific emotion from others. This initial step works well for five of the seven emotions which are easier to distinguish. If further prediction is needed, then the computationally slower HOG feature

extraction is performed and a class prediction is made with a trained SVM. Reasonable accuracy is achieved with the predictor, dependent on the testing set and test emotions. Accuracy is 81% with contempt, a very difficult-to-distinguish emotion, included as a target emotion and the run-time of the hybrid approach is 20% faster than using the HOG approach exclusively.

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