DCT FEATURES BASED MALIGNANCY AND ABNORMALITY TYPE DETECTION METHOD FOR MAMMOGRAMS

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ABSTRACT. *Radiologists are interested in finding the stage of cancer, so the patient can be treated and cured accordingly. This is possible by finding the type of abnormality to measure the severity of cancer in mammograms. CAD could provide them the option of better opinion about the type of abnormality. In this paper, we have proposed a novel method which can classify cancerous mammogram into six classes. Features are extracted from preprocessed images and passed through different classifiers to identify malignant mammograms and the results of winning algorithm that is Support Vector Machine (SVM) in this case are considered for next processing. Mammograms declared as malignant by SVM are divided into six classes. Again, binary classifier (SVM) is used for multi-classification using one against all technique for classification. Output of all classifiers is combined by max, median and mean rule. It has been noted that results are very much satisfactory and accuracy of classification of abnormalities is more than 96% in case of max rule. MIAS [47] data set is used for experimentation purpose.*
Keywords: Breast cancer, Mammogram, Support vector machine, Classification

1. **Introduction.** In many Western and American countries, breast cancer is the most common cancer among women. American National Cancer Institute reported that the population of the estimated new breast cancer cases for the 2008 in USA is round about 179600, while the estimation of deaths is more than 40,700 [2]. These statistics claim that breast cancer held the second position of appearance in diagnosed new cases following prostate cancer compared with other forms of cancer. Over the past decades, it has become alarming that breast cancer incidence rates are increasing steadily. However, the mortality rates for breast cancer have remained relatively constant due to more effective treatment and earlier diagnosis [1]. Also, the United States has the highest crude and age-standardized breast cancer incidences in the world: roughly 178,480 new cases of invasive breast cancer and 62,030 new cases of in situ breast cancer, 85% of which are ductal carcinoma in situ (DCIS), were diagnosed among American women in 2007 [2]. Between 1975 and 1990, the breast cancer mortality rate increased slightly by 0.4% annually. Between 1990 and 2002, the breast cancer mortality rate reduced by an average of 2.3% per year in all women combined, with larger decreases observed in younger women (younger than 50 years). This decline in breast cancer mortality has been accredited both to improvements in breast cancer treatment and to the benefits of mammographic screening. As the percentage of cases diagnosed at the in situ or early invasive stages of disease increases,