International Journal of Computer Science and Engineering (IJCSE)
ISSN Print: 2278–9960;ISSN Online:2278–9979;
Vol. 8, Issue 5, Aug–Sep 2019; 13–22

International Academy of Science, Engineering and Technology
Connecting Researchers; Nurturing Innovations

THE BREAST TISSUE DENSITY CLASSIFICATION BASED ON HARALICK AND SFTA FEATURES EXTRACTION METHODS

Ashgan M. Omer[1], Frédérique Frouin[2] & AlnazierOsman[3]

[1]Research Scholar, Pierre and Marie Curie University, Paris, France & Sudan University of Science and Technology, Khartoum, Sudan

[2]Research Scholar, Université Paris Saclay, Orsay, France

[3]Research Scholar, Department of Biomedical Engineering, Sudan University of Science and Technology, Khartoum, Sudan

ABSTRACT

It has been shown that the sensitivity of any computer-aided diagnostic (CAD) system in the detection of breast cancer is impacted by breast density, thus characterizing the breast tissue type in mammograms can act as a primary step to detect cancer and reduce false positive. In this paper we introduce an approach to the classification of mammogram images according to breast tissue type based on Haralick, segmented-based fractal texture analysis SFTA, and combining Haralick and SFTA feature extraction methods. This study examines two classification tasks using support vector machines (SVM) classifiers. The first classification problem differentiate between fatty and non-fatty tissue, the second one is differentiate between glandular and dense tissue. Experiments were applied to the whole set of 322 mammogram images from the MIAS database. The experiments deal with two sides of woman breast as one case study rather than individual images. The best classification accuracies rate are 88% achieved infatty and non-fatty classification taskby using SFTA features, and 78% for glandular and dense classification using a combination of Haralick and SFTA feature extraction methods.

KEYWORDS: *Breast Density, Haralick Features, Mammogram, SFTA Features*

Article History

Received: *25 Aug 2019* **|** ***Revised:*** *10 Sep 2019* **|** ***Accepted:*** *20 Sep 2019*