**ABSTRACT**

Skin cancer emerge as the one of the most dangerous kinds of cancer occurred to human beings. Early detection of skin cancer is curable and necessary treatment can save the patient’s life. There are several types of skin cancer diseases with each having respective characteristics. The traditional way of detecting skin lesion include ABCDET technique which is widely used by the doctors. However manual detection of skin lesion fails in the current era with rapidly increasing skin cancer cases world-wide. Automatic detection of skin lesion is needed to perform the detection faster and minimize the diagnostic errors, lowering the overhead on the doctors. With the advent of different machine learning and deep learning techniques, an intelligent system can be developed to identify the skin lesions accurately. Neural networks are such a deep learning models used for the extraction and classification of skin lesion features.

This paper presents a comparative analysis of skin lesion classification using CNN and Random Forest classifiers and real-time simulation of skin cancer detection. The dataset considered is HAM10000 dataset which provides a wide range of images of seven different types of skin lesions. Followed by image preprocessing for denoising and artifacts removal, image segmentation is done using Active Contours Without Edges (ACWE) and feature extraction is done using ABCDT technique where the textural analysis is implemented using Gray Level Co-Occurrence Matrix (GLCM) and Fractal Dimension texture analysis (FDTA). The accuracy with CNN classification is obtained to be 91.97% and that of Random Forest classification is 89.82%. The real-time simulation for skin cancer detection using trained models is performed and CNN model performed well than Random Forest classifier.