**ABSTRACT**

Skin cancer is the most common form of cancer globally, ranking as the 17th most prevalent cancer with 2-3 million non-melanoma and 132,000 melanoma cases worldwide. It arises due to the abnormal growth of skin cells, primarily caused by excessive exposure to ultraviolet rays. Early detection and accurate classification of skin lesions are crucial for effective treatment and improved patient outcomes. Given the challenges dermatologists face in accurately diagnosing skin cancer, there is an urgent need for an automated and efficient diagnostic system. This study presents an automated system for classifying skin lesions into seven different types of skin cancer using a Convolutional Neural Network (CNN) model, trained on the HAM10000 dataset, which includes 10,015 dermatoscopic images of various skin lesions. Our approach leverages the MobileNet architecture, renowned for its efficiency and effectiveness in image classification tasks. The MobileNet model, pre-trained on the extensive ImageNet dataset, is fine-tuned on the HAM10000 dataset to specialize in skin lesion classification by employing transfer learning. The model achieved an overall accuracy of 89.21% across the seven skin cancer classes, with top-2 and top- 3 accuracies of 96.55% and 98.45%, respectively. The trained model demonstrated promising results, underscoring its potential as a reliable tool for assisting dermatologists in the early detection of skin cancer.

**Keywords:** Skin Cancer, CNN, MobileNet, HAM10000, Lesion Classification, ImageNet

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