ABSTRACT

Within the fast-paced environment of artificial intelligence, deep learning algorithms have truly played a very special and important role in enhancing skin cancer detection; in fact, they may dramatically alter survival and early diagnosis rates. While most studies have focused on a single model of technique, our research utilizes a multiframework model to optimize melanoma detection. In this project, we also combine Deep Convolutional Neural Networks VGG19 (DCNN), VGG16, ResNet50, Capsule Networks (CapsNet), and vision transformers (ViT) for more profound images' features. Then the embedded features are fed into an ensemble model that involves five machine learning classifiers: Support Vector Classifier (SVC), XGBoost, Random Forest, K- Nearest Neighbors (KNN), and Logistic Regression via majority voting. This classification enhanced the accuracy of classification; ViT had attained its highest accuracy at 92.4%. The ensemble model we developed also performed well overall as it achieved 92.3% when used on a melanoma dataset. These results confirm that our ensemble approach significantly outmatch individual models and contributes more to the efficient detection of skin cancer.