

School of Computer Science and Engineering College of Engineering

Skin Cancer Detection

Spreading Awareness with Deep Learning Techniques

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Project Objectives

This project aims to develop a deep learning model to provide lesion-specific diagnostics, to be deployed in unsupervised settings, with a supplementary smartphone application, improving the prognosis of patients with higher chances of a pleasant treatment.

Methodology

The SkinMNIST HAM10000 dataset is used for model training, which is a collection of dermoscopy images.



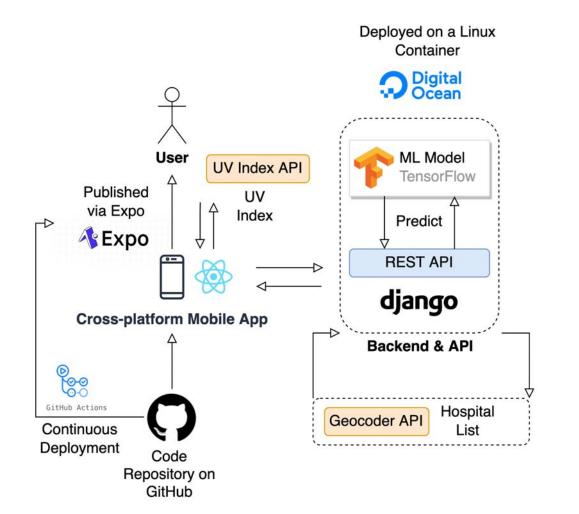
Ensemble Model

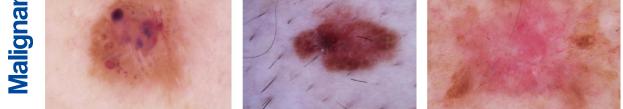
The four models selected are InceptionResNetV2, DenseNet201, and B4, B6 variants of EfficientNet, with the following results*.



Smartphone Application

A cross-platform application is developed with React Native, connected via an API, deployed on the cloud.





Seven base CNN models were chosen for training on the dataset and evaluated on a set performance metric indicators with a test set. Based on the results, four top base models were selected based on F1score and AUC-PR to create an ensemble model. Finally, the ensemble deep learning classifier's performance metrics are reported.

Model Performance

Model	F1 score [†]	Accuracy	AUC-PR
Inception v3	0.74	0.86	0.72
VGG16	0.84	0.90	0.82
Xception	0.86	0.92	0.89
DenseNet201	0.88	0.92	0.89
InceptionResNet v2	0.88	0.93	0.89
ResNet50	0.88	0.93	0.88
EfficientNet B4	0.88	0.93	0.90
EfficientNet B6	0.88	0.93	0.90

5 47 and 40 E Scan	⊃ 1:28 -7 ant 💎 🗲 Scan	
		Potentially Harmless Lesion Scan Results: Low or Medium Risk Symptomps Assessment: High Risk According to your answers, you have scored 10/10 points. Based on your answers, you are considered risky.
You need to upload your Skin Image Use Camera	Diagnosis	Based on your results, we recommend you to consult a specialist immediately .
	Harmful Lesion	Read More about Potentially Harmless Lesion
Upload image from gallery PNG or JPG	Scan Results: High Risk Symptomps Assessment: High Risk	Save Scan
	According to your answers, you have scored 10/10 points.	Find a Hospital
	Based on your answers, you are considered risky.	Find Out More
	Based on your results, we	
Click For Help	Click For Help	Click For Help

† Macro Avg. F1 Score* on a fixed test set, from HAM10000

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