"SpotCheck:

Revolutionizing Melanoma Detection with Image Recognition"

PEOPLE

LIFE

Skin cancer is a major public health problem, with over 5,000,000 newly diagnosed cases in the United States every year. Melanoma is the deadliest form of skin cancer, responsible for an overwhelming majority of skin cancer deaths. In 2022, the global incidence of melanoma was estimated to be over 350,000 cases, with almost 60,000 deaths. Although the mortality is significant, when detected early, melanoma survival exceeds 95%.

Acquiring the data

Building the model:

CNN

A Convolutional Neural Network (CNN) is a type of artificial neural network that is mainly used for image and video classification. a CNN is to extract the features of an image using convolutional layers and then use fully connected layers to classify the image based on those features

KERAS

Keras is an open-source deep learning framework written in Python. It provides a high-level API for building and training deep learning models, allowing developers to quickly prototype and build models with minimal code.

MobileNetV2

MobileNetV2 is based on depthwise separable convolutions, which decompose a standard convolution into two separate operations: a depthwise convolution that applies a single filter to each input channel, and a pointwise convolution that applies a 1x1 filter to combine the outputs of the depthwise convolution.

8 categories of dermoscopic imiges
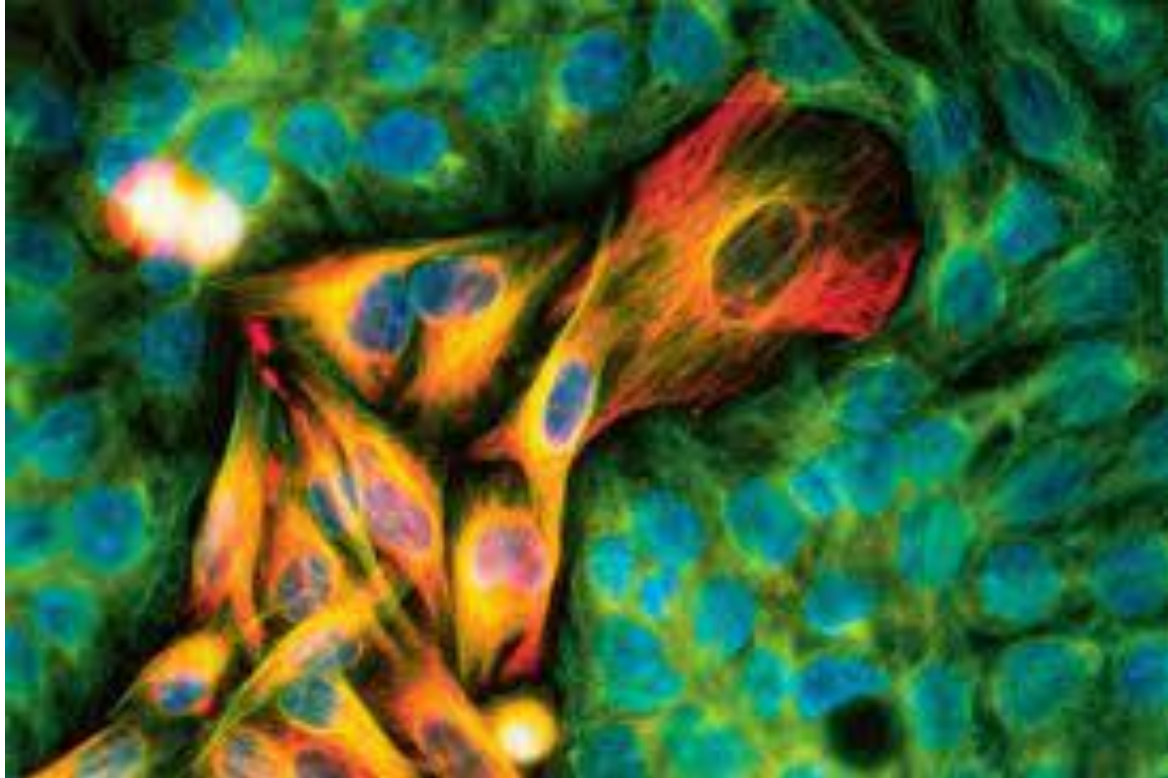
Melanoma
Melanocytic nevus
Basal cell carcinoma
Actinic keratosis
Benign keratosis
Vascular lesion
Squamous cell carcinoma
Dermatofibroma

Model details

| Layer (type)	Output Shape	Param #
input_10 (InputLayer)	[(None, 256, 256, 3)]	0
sequential_3 (Sequential)	(None, 224, 224, 3)	0
tf.math.truediv_5 (TFOpLambda)	(None, 224, 224, 3)	0
tf.math.subtract_5 (TFOpLambda)	(None, 224, 224, 3)	0
mobilenetv2_1.00_224 (Functional)	(None, 7, 7, 1280)	2257984
conv2d_5 (Conv2D)	(None, 7, 7, 8)	10248
global_average_pooling2d_2 (GlobalAveragePooling2D)	(None, 8)	0
dense_2 (Dense)	(None, 8)	72

Total params: 2,268,304
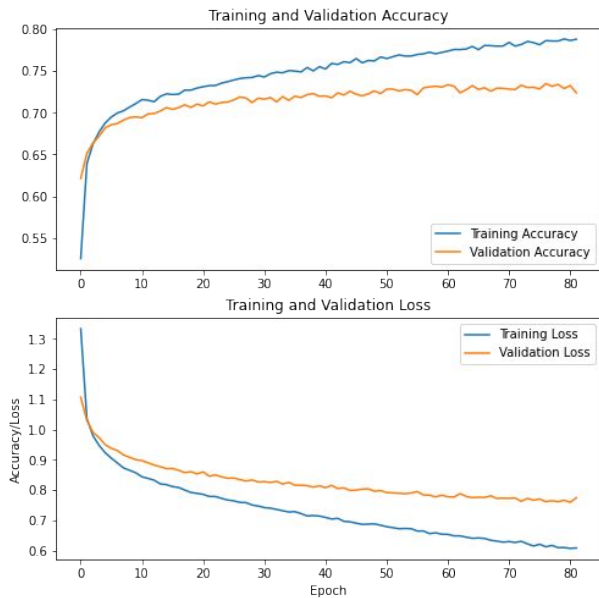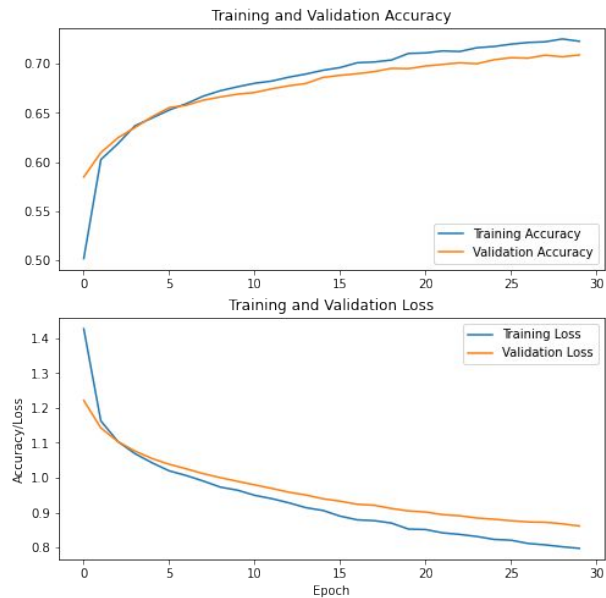Trainable params: 2,234,192
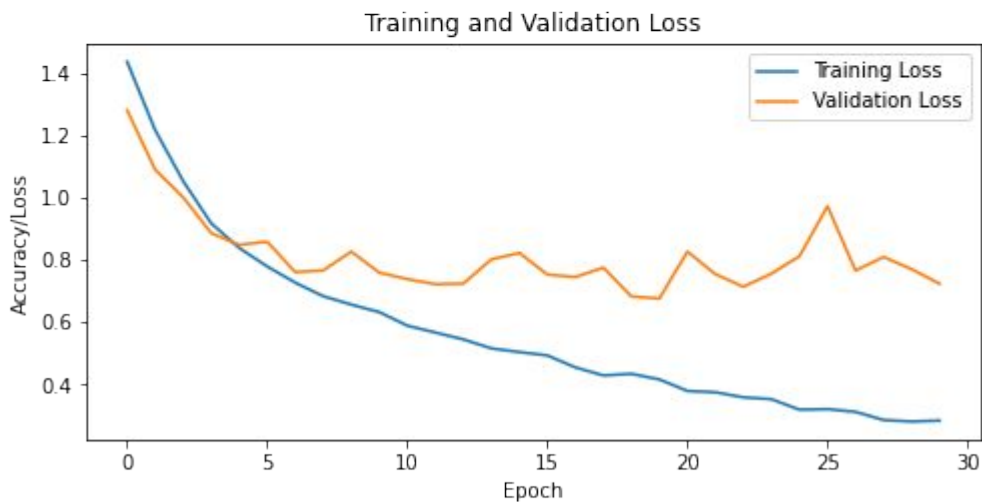Non-trainable params: 34,112
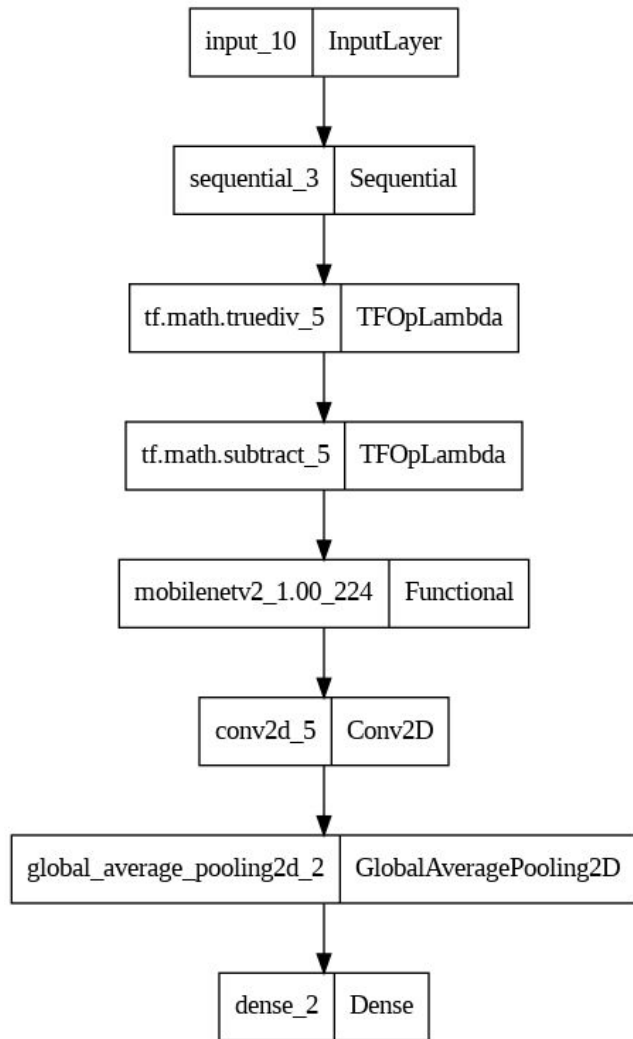
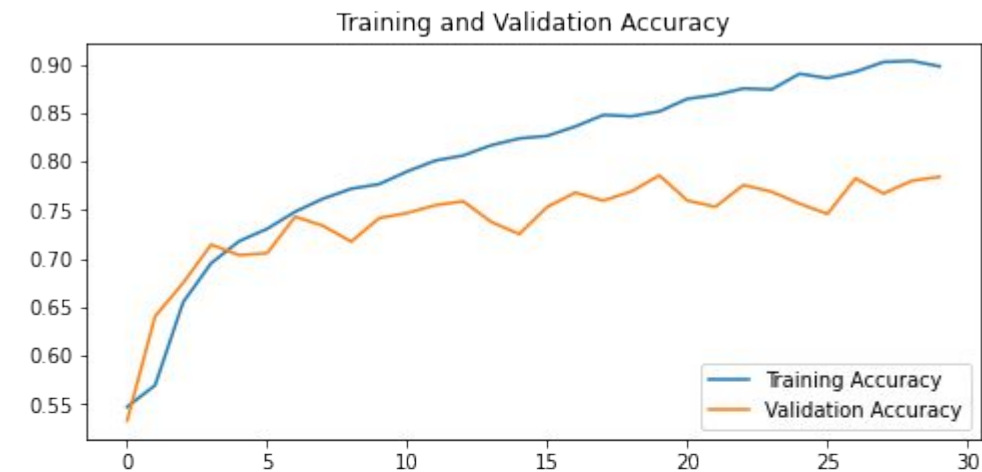# Dont get confused
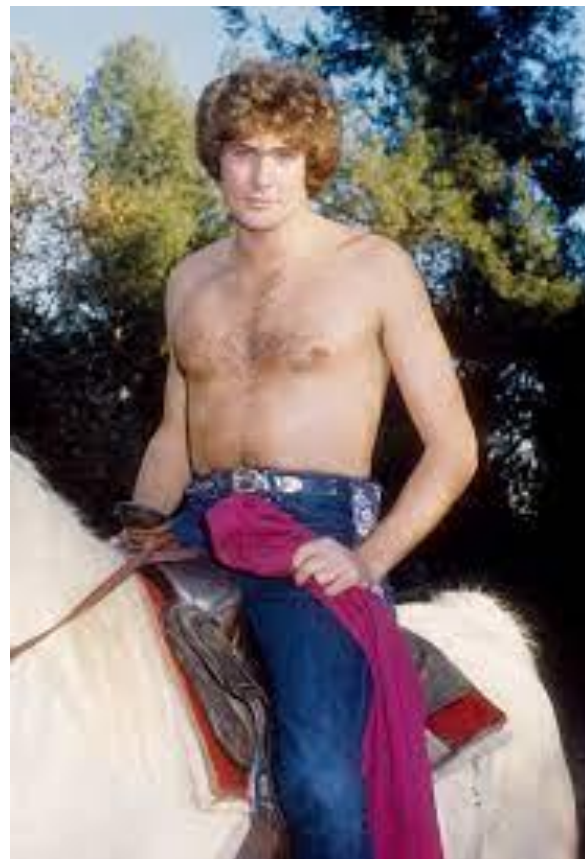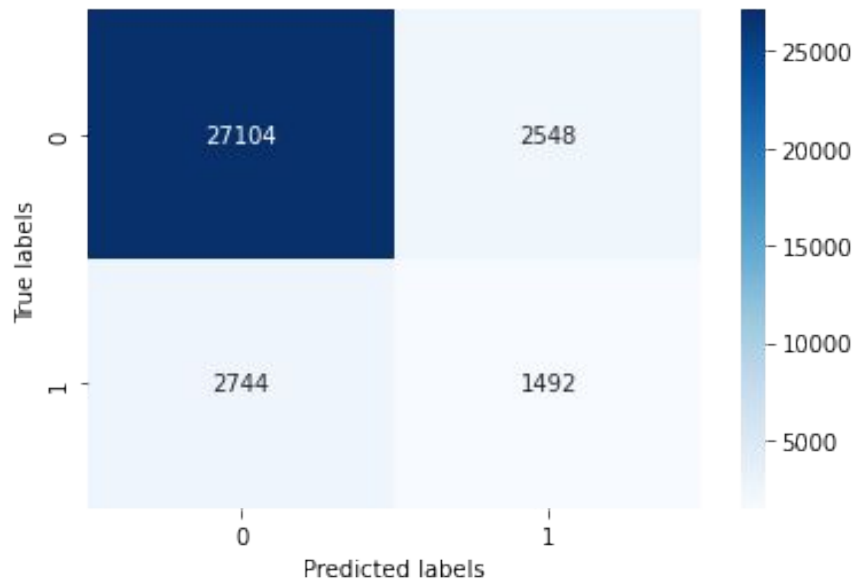
MODELS, MODELS, MODELS
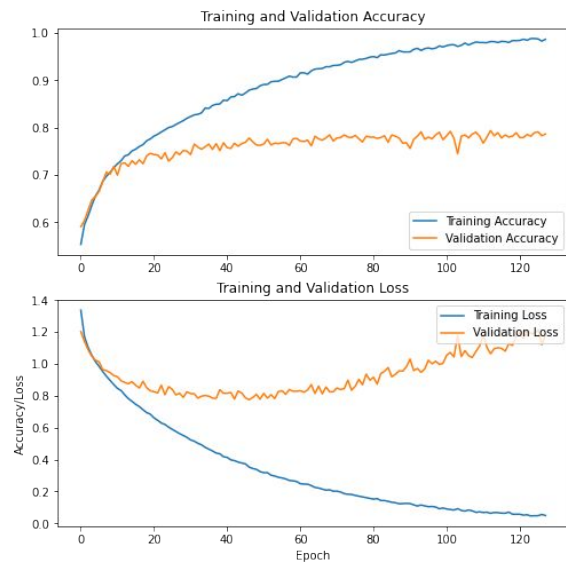
Model results

```
 0.7232 - accuracy: 0.7842
Validation loss: 0.723201334476471
Validation accuracy: 0.7842304110527039
```

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loss: 0.7257 - accuracy: 0.7939
Test loss: 0.7257325053215027
Test accuracy: 0.793900191783905
```

Future work

Fine tune model

Add to web application

Add segmentation

Recommendations:
Check early
Check often

"All data has its beauty, but not everyone sees it."

Got questions? Get answers!

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