Skin cancer detection

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Introduction

The emergence of automated skin cancer detection systems, driven by machine learning and computer vision, represents a transformative solution to these challenges. These systems utilize sophisticated algorithms, notably convolutional neural networks (CNNs), to analyze images of skin lesions, extracting intricate patterns and features crucial for accurate classification.

Dataset

- The training set has 2239 photos divided into 9 classes
- the test set contains 2357 images divided into 1 class
- Image resizing to 224x224 pixels
- Normalization (scaling pixel values between 0 and 1)

Methodology

CNN architecture used was trained for 10 epochs with batch size 32 and Adam optimizer with learning rate 0.0001

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Found 2239 images belonging to 9 classes.
Found 2357 images belonging to 1 classes.
Epoch 1/10
69/69 [==============================] - 85s 1s/step - loss: -4419.8188 - accuracy: 0.1666 - val_loss: 4258.8066 - val
y: 0.0089
Epoch 2/10
69/69 [==============================] - 63s 900ms/step - loss: -25890.6406 - accuracy: 0.1679 - val_loss: 16034.6709
curacy: 0.0089
Epoch 3/10
69/69 [==============================] - 62s 896ms/step - loss: -70077.0625 - accuracy: 0.1679 - val_loss: 36518.9883
curacy: 0.0089
Epoch 4/10
69/69 [==============================] - 62s 897ms/step - loss: -138722.5625 - accuracy: 0.1679 - val_loss: 65886.9922
ccuracy: 0.0089
Epoch 5/10
69/69 [==============================] - 62s 893ms/step - loss: -232556.9062 - accuracy: 0.1679 - val_loss: 104554.265
accuracy: 0.0089
Epoch 6/10
69/69 [==============================] - 63s 899ms/step - loss: -352560.3438 - accuracy: 0.1679 - val_loss: 152550.078
accuracy: 0.0089
Epoch 7/10
69/69 [==============================] - 62s 893ms/step - loss: -497295.5000 - accuracy: 0.1679 - val_loss: 209391.671
accuracy: 0.0089
Epoch 8/10
69/69 [==============================] - 63s 900ms/step - loss: -665227.3750 - accuracy: 0.1679 - val_loss: 275126.562
accuracy: 0.0089
Epoch 9/10
69/69 [==============================] - 63s 909ms/step - loss: -856487.5625 - accuracy: 0.1679 - val_loss: 348693.218
accuracy: 0.0089
Epoch 10/10
69/69 [==============================] - 62s 885ms/step - loss: -1071981.5000 - accuracy: 0.1679 - val_loss: 429656.12
_accuracy: 0.0089
74/74 [==============================] - 24s 321ms/step - loss: 429717.5312 - accuracy: 0.0089
Validation Accuracy: 0.89%
```

Results

Accuracy:- 89%
Results of the Actinic Keratosis:
Precision: 14%
Recall: 100%
F1-score: 24%

Refecrence

1- skin cancer detection Dataset :- https://www.kaggle.com/datasets/pattnaiksatyajit/skin-cancer

2-National Cancer Institute. (2021). Understanding Cancer. [Online]. Available:

https://www.cancer.gov/about-cancer/understanding/what-is-cancer