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Analysis of Various Pet Animals by Using Deep Learning Algorithm

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Abstract

Digitalization in every where is unavoidable platform in present scenario and to contribute to pet animals this system focus on the pet animals identification for the purpose database taken from the kaggle and then preprocess those images and then extract the feature extraction can be made by using the convolutional neural networks (CNN) from that algorithm system train the input images along with the validation images and the test image which gives effective result in the identification of pet animal with the accuracy rate of 90% from the result.

Keywords: Pet animal, Convolutional Neural Networks, Feature Extraction.

Introduction

The system has to process the exact identification of the particular pet animal from the data set and to process the entire workflow from kaggle the data set has been used in order to provide effective result and pet animal images were preprocessed and segmented into various pet animal from those images apply the convolutional neural networks to extract the feature in different form to process the data [1].

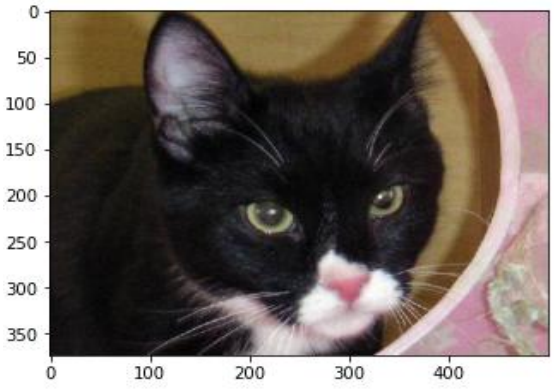

Figure 1. Sample Image

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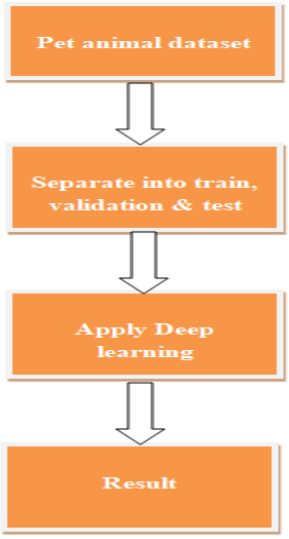

Figure 2. Block Diagram of the system

The Figure 2 shows the entire work flow model of the system in and the result can be achieved from the above processing of the data to categories the pet animal by using the CNN with effective result part [2].

Implementation

This system made to process the result with more accuracy with training phase, testing phase and also validation phase to have effective result after processing the image from the kaggle input the CNN model and run that model the result will generate the time, loss, accuracy, val_loss and val_accuracy are the parameter taken into account to process the data [3-5].

```
Epoch 1/20
5/5 [==============================] - 1s 119ms/step - loss: 0.8191 - accuracy: 0.3333 - val_loss: 0.7456 - val_accuracy: 0.416
7
Epoch 2/20
5/5 [==============================] - 0s 90ms/step - loss: 0.7664 - accuracy: 0.3333 - val_loss: 0.7242 - val_accuracy: 0.4167
Epoch 3/20
5/5 [==============================] - 0s 90ms/step - loss: 0.6988 - accuracy: 0.5333 - val_loss: 0.7222 - val_accuracy: 0.4167
Epoch 4/20
5/5 [==============================] - 0s 91ms/step - loss: 0.6592 - accuracy: 0.6667 - val_loss: 0.7291 - val_accuracy: 0.4167
Epoch 5/20
5/5 [==============================] - 0s 86ms/step - loss: 0.6651 - accuracy: 0.6429 - val_loss: 0.7363 - val_accuracy: 0.4167
Epoch 6/20
5/5 [==============================] - 0s 91ms/step - loss: 0.7292 - accuracy: 0.4286 - val_loss: 0.7255 - val_accuracy: 0.4167
Epoch 7/20
5/5 [==============================] - 0s 90ms/step - loss: 0.7389 - accuracy: 0.3571 - val_loss: 0.7131 - val_accuracy: 0.4167
Epoch 8/20
5/5 [==============================] - 0s 88ms/step - loss: 0.7357 - accuracy: 0.2000 - val_loss: 0.6973 - val_accuracy: 0.4167
Epoch 9/20
5/5 [==============================] - 1s 106ms/step - loss: 0.6959 - accuracy: 0.4667 - val_loss: 0.6956 - val_accuracy: 0.416
7
Epoch 10/20
5/5 [==============================] - 1s 100ms/step - loss: 0.6969 - accuracy: 0.4286 - val_loss: 0.6957 - val_accuracy: 0.416
7
Epoch 11/20
5/5 [==============================] - 0s 89ms/step - loss: 0.6953 - accuracy: 0.4667 - val_loss: 0.6934 - val_accuracy: 0.4167
Epoch 12/20
5/5 [==============================] - 0s 91ms/step - loss: 0.6906 - accuracy: 0.4667 - val_loss: 0.6872 - val_accuracy: 0.5833
Epoch 13/20
5/5 [==============================] - 0s 92ms/step - loss: 0.7054 - accuracy: 0.4000 - val_loss: 0.6909 - val_accuracy: 0.5833
Epoch 14/20
5/5 [==============================] - 0s 93ms/step - loss: 0.6922 - accuracy: 0.4000 - val_loss: 0.6878 - val_accuracy: 0.5833
Epoch 15/20
5/5 [==============================] - 0s 91ms/step - loss: 0.6950 - accuracy: 0.5333 - val_loss: 0.6870 - val_accuracy: 0.5833
Epoch 16/20
5/5 [==============================] - 0s 98ms/step - loss: 0.6777 - accuracy: 0.7143 - val_loss: 0.6828 - val_accuracy: 0.5833
Epoch 17/20
5/5 [==============================] - 0s 88ms/step - loss: 0.6960 - accuracy: 0.5333 - val_loss: 0.6828 - val_accuracy: 0.5833
Epoch 18/20
5/5 [==============================] - 0s 91ms/step - loss: 0.6923 - accuracy: 0.5333 - val_loss: 0.6829 - val_accuracy: 0.5833
Epoch 19/20
5/5 [==============================] - 0s 97ms/step - loss: 0.7120 - accuracy: 0.4000 - val_loss: 0.6863 - val_accuracy: 0.5833
Epoch 20/20
5/5 [==============================] - 0s 89ms/step - loss: 0.6843 - accuracy: 0.6000 - val_loss: 0.6839 - val_accuracy: 0.5833
```

Figure 3. CNN Model Result

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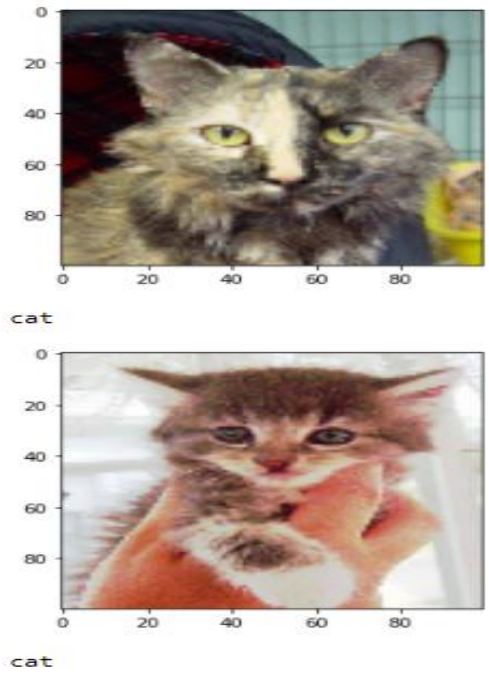
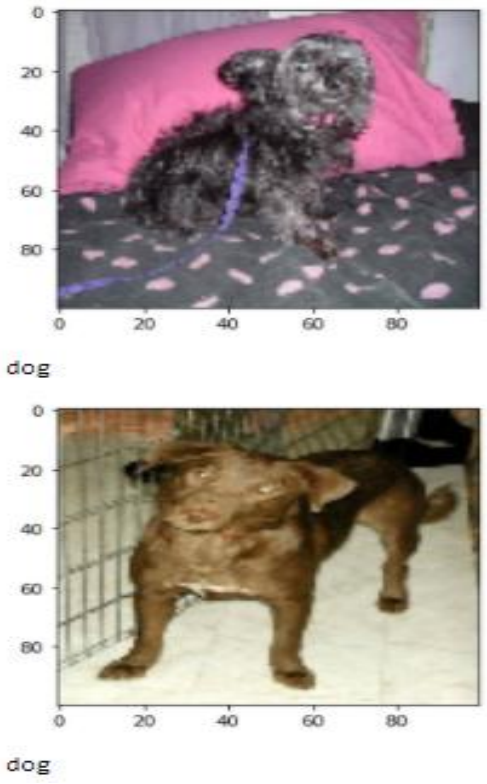


Figure 4. Output of the Identified Pet animals



The Figure 5. Indicates different form of the output system

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The figure 4 & figure 5 indicates the output of the different category of the pet animal along with the image and identified name as per the input given to the system and by applying the CNN the result has been generated with the values for the future processing of the data.

Conclusion

Identification with high accuracy with deep learning model algorithm namely CNN is an efficient method for the process the large set of image data and after processing of data CNN model implemented to extract the feature and by using those feature with the system now it will show the accuracy, loss, val_accuracy and val_accuracy can be generated in this system to find out the effectiveness of the system and final output for the prediction of pet animal in different category with high accuracy made and the implementation part justify the result.

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