Helwan University

كلية الحاسبات والذكاء الإصطناعي
Faculty of Computers & Artificial Intelligence

Faculty of Computers and

Artificial Intelligence Computer

Science Department

2021/2022

CS 396 Selected

Topics in CS-2

Documentation

Report Submitted for Fulfillment of the
Requirements and ILO'
for Selected Topics in CS-1 course for Fall 2022

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General Information on the selected dataset:

name of the dataset used: Bird Species

link of the dataset:
https://drive.google.com/drive/folders/1sz0Bot7Tfg0elD6P8lDs9sitrKTE94VL

the total number of samples in the dataset is 811

Training Data Samples is 486

Validating Data Samples is 163

Testing Data Samples is 162

the dimension of images: 224x224x3

Number of classes: 6

Labels of the dataset: AMERICAN GOLDFINCH, BARN OWL, CARMINE BEE-EATER, DOWNY WOODPECKER, EMPEROR PENGUIN, FLAMINGO

Implementation details:

The ratio of the training dataset is 60%, and Validation dataset is 20% and the Testing dataset is 20%

First, we created 3 Conv2d Layers The first one has 8 filters, kernel size 3x3, and activation function relu

The second one has 16 filters, kernel size 3x3, and activation function relu

The third one has 32 filters, kernel size 3x3, and activation function relu

Then we created 2 ANN layers The first layer contains 128 neurons and relu as activation function

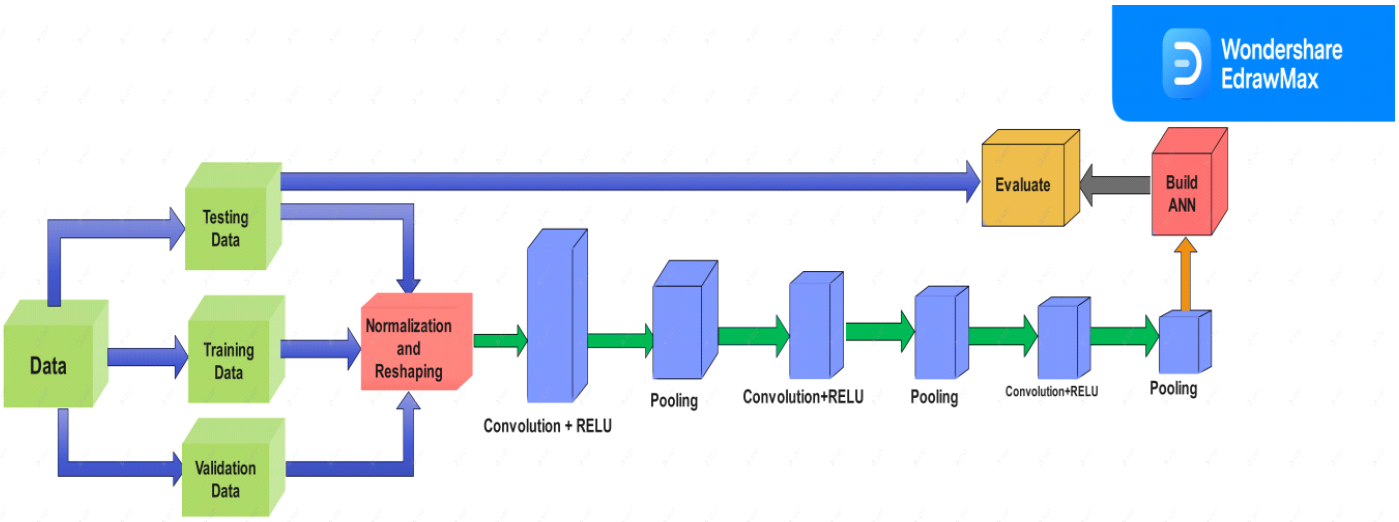
the output layer contains 6 neurons of the classes with softmax as an activation function

Then we compiled the model and used Adam as an optimizer with a learning rate of 0.0005 and categorical cross-entropy as a Loss Function

Then we used Early Stop with patience 10 epochs to monitor the validation loss and minimize it.

Then we Trained the model with 1000 epochs and early stop terminated the training process on epoch number 25.

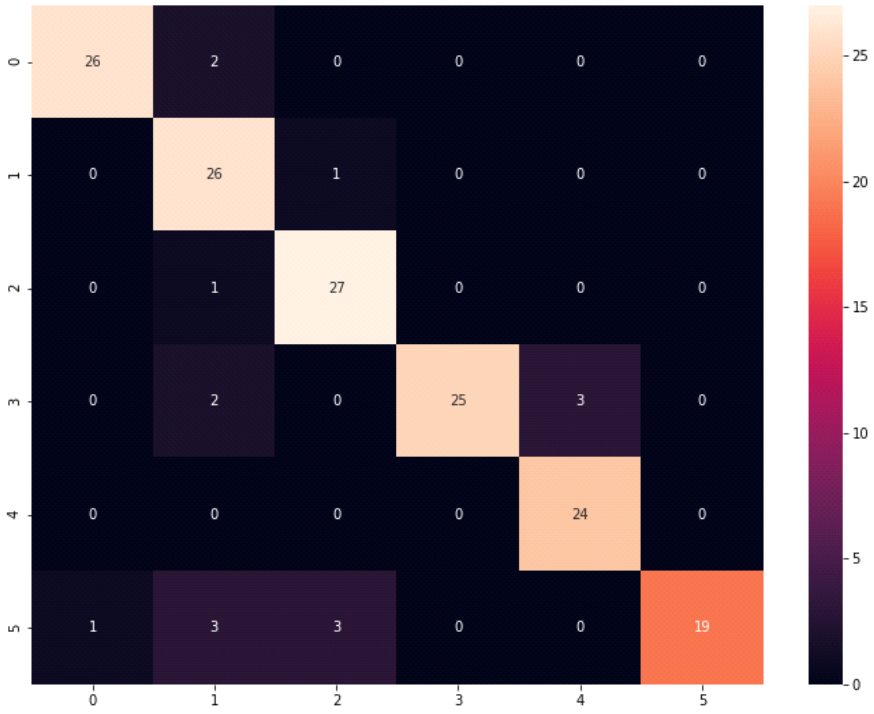
Block diagram:



Result Details:

We used the Confusion Matrix and Classification Report as a measure to evaluate the model

Confusion Matrix:



Classification Report:

	precision	recall	f1-score	support
0	0.96	0.93	0.95	28
1	0.76	0.96	0.85	27
2	0.87	0.96	0.92	28
3	1.00	0.83	0.91	30
4	0.89	1.00	0.94	24
5	1.00	0.73	0.84	26
accuracy			0.90	163
macro avg	0.91	0.90	0.90	163
weighted avg	0.92	0.90	0.90	163

The accuracy of the model on Testing Data is 90%