Selected Topics in CS 2 Presentation:

Architecture used in the Paper:

Training Dataset → Gray Scale → Random scaling → Cropping → Flipping → Normaize → Neural Model Learning

Testing Dataset → resizing → Cropping → Neural model inference → Evaluation

Neural model inference ← Neural Model Learning
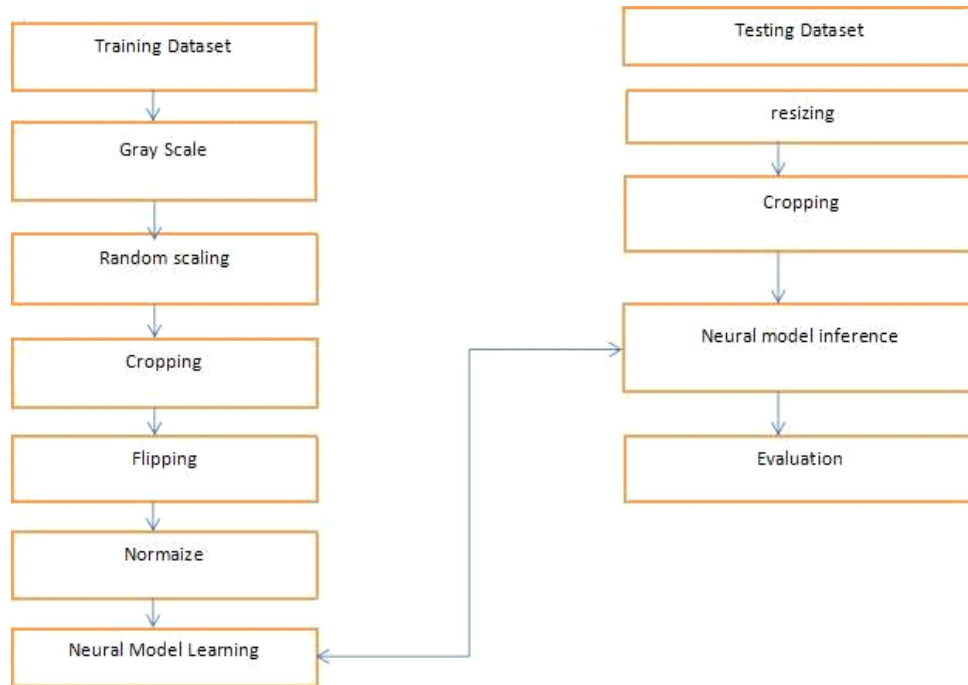
Dataset details:

The dataset contains 6 classes of Bird Species, Data class labels is (AMERICAN GOLDFINCH, BARN OWL, CARMINE BEE-EATER, DOWNY WOODPECKER, EMPEROR PENGUIN, FLAMINGO)

The data contains 811 images, about 140 images for each class

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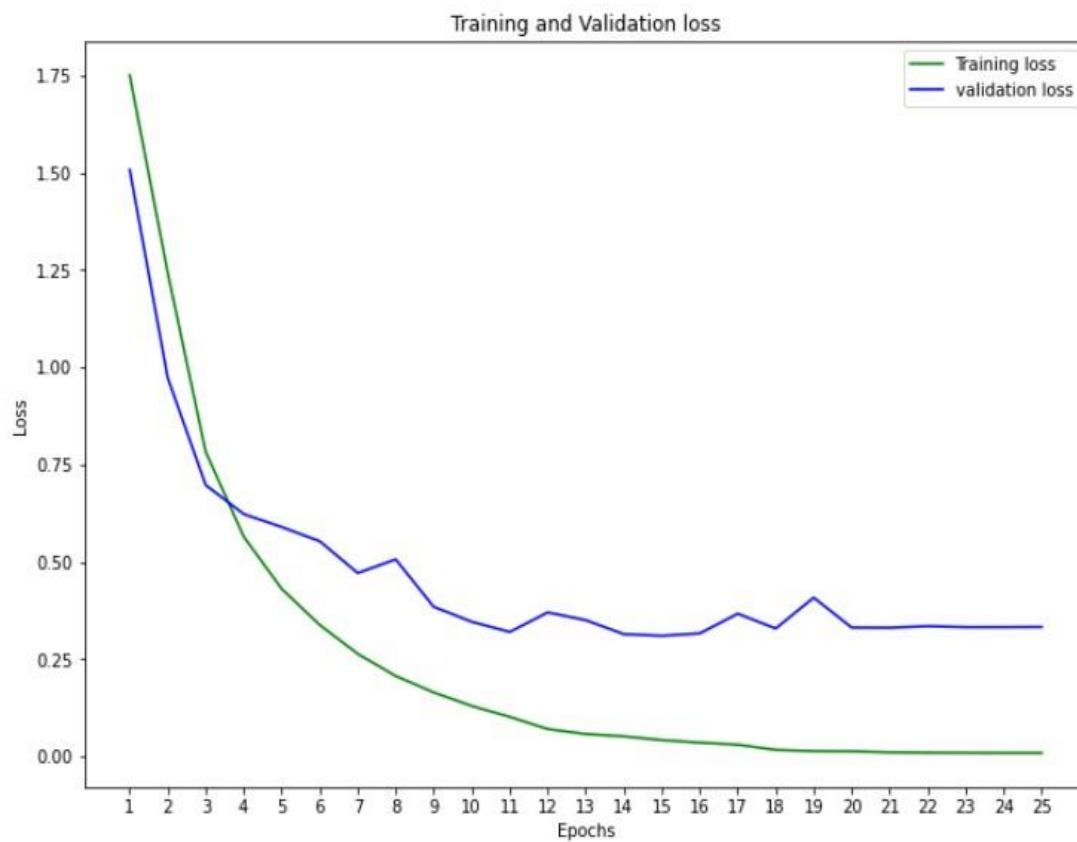
Then we used Early Stop with patience 10 epochs to monitor the validation loss and minimize it.

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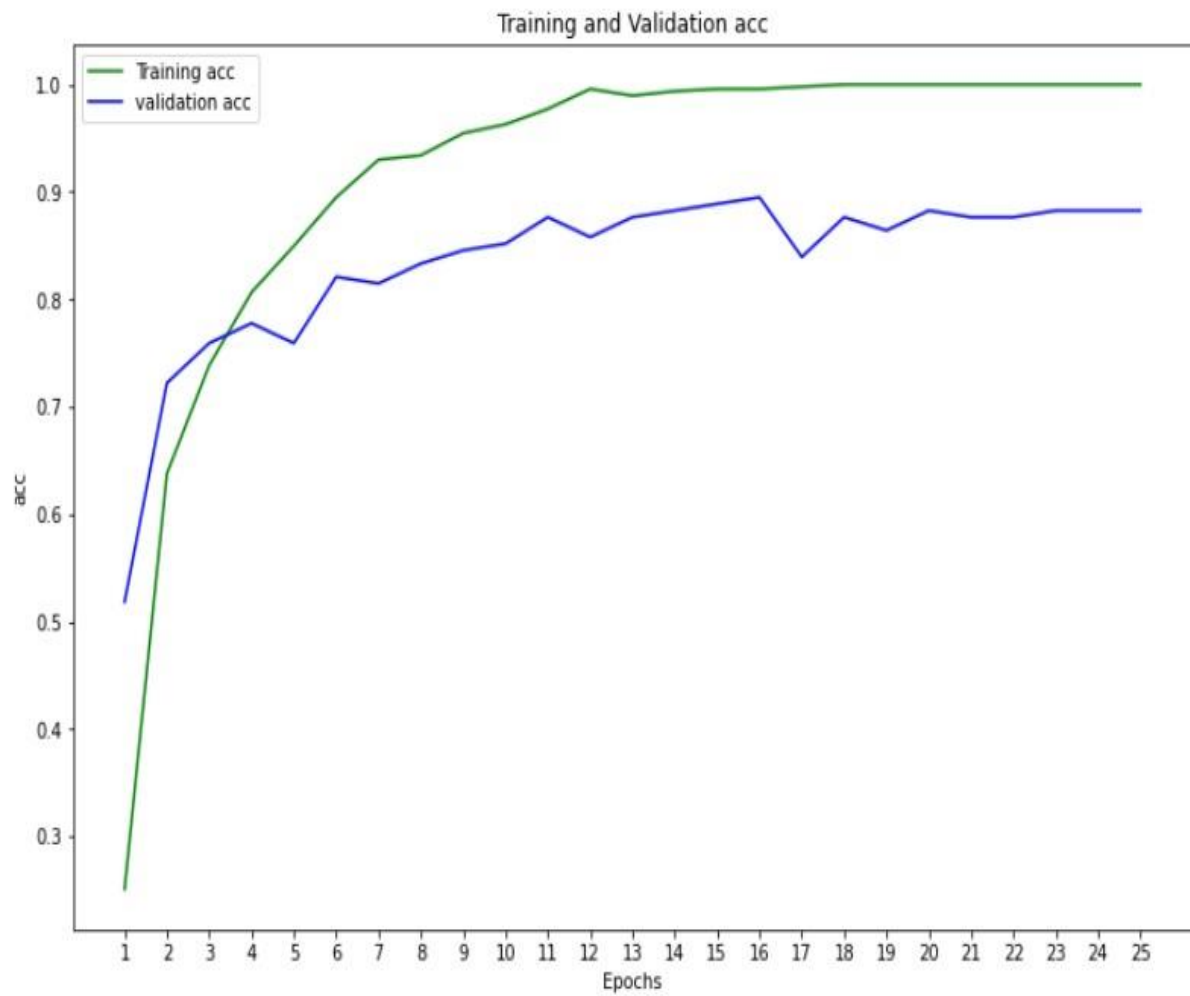
Results and Visualizations:

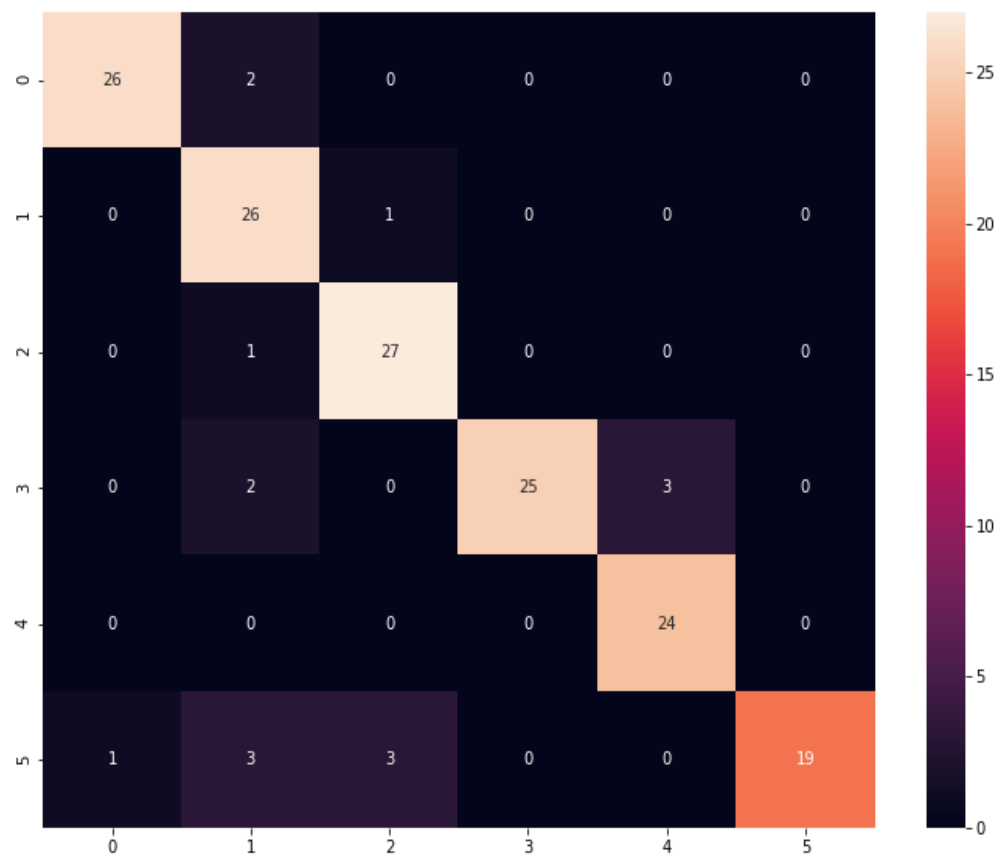We Evaluated the model on the testing dataset and it's accuracy is 90%

Loss Curve:

Accuracy Curve:

Confussion 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