

Task 1 – Convolutional Neural Network

The hyperparameters for the model are:-

- 1) Batch Size – 64
- 2) Learning Rate – 0.0005
- 3) Epoch – Early stopping is used with k (patience) of 5. The number of epochs required to train the model was 30.
- 4) Patience – 5

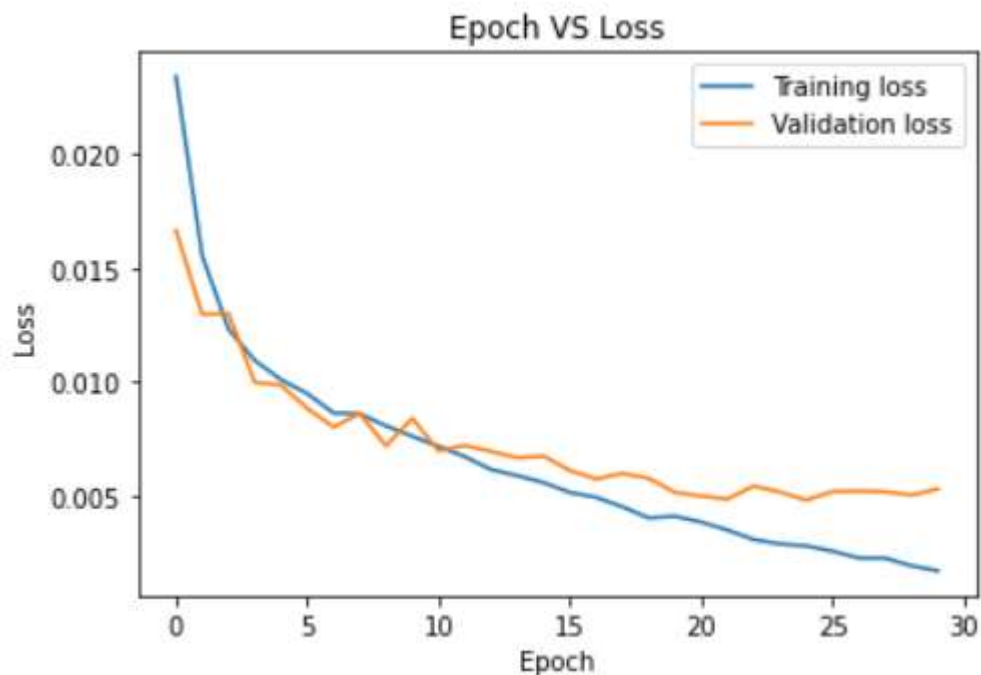
The loss of the model are as follows:-

- 1) Training Loss – 0.0028
- 2) Validation Loss – 0.0048

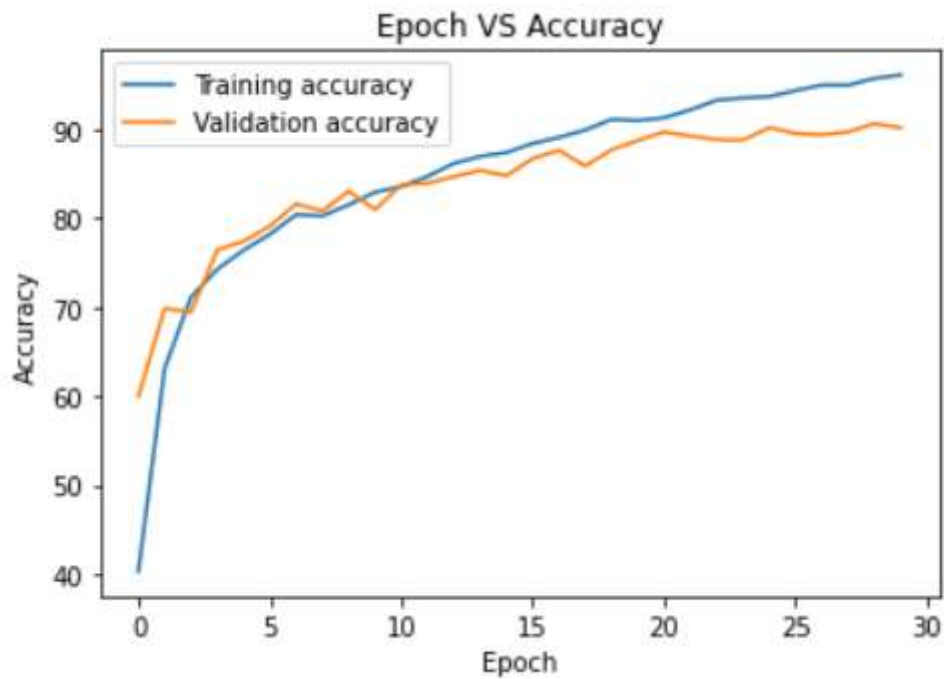
The accuracy of the model are as follows:-

- 1) Training Accuracy – 96.036%
- 2) Validation Accuracy – 90.171%
- 3) Test Accuracy – 90%

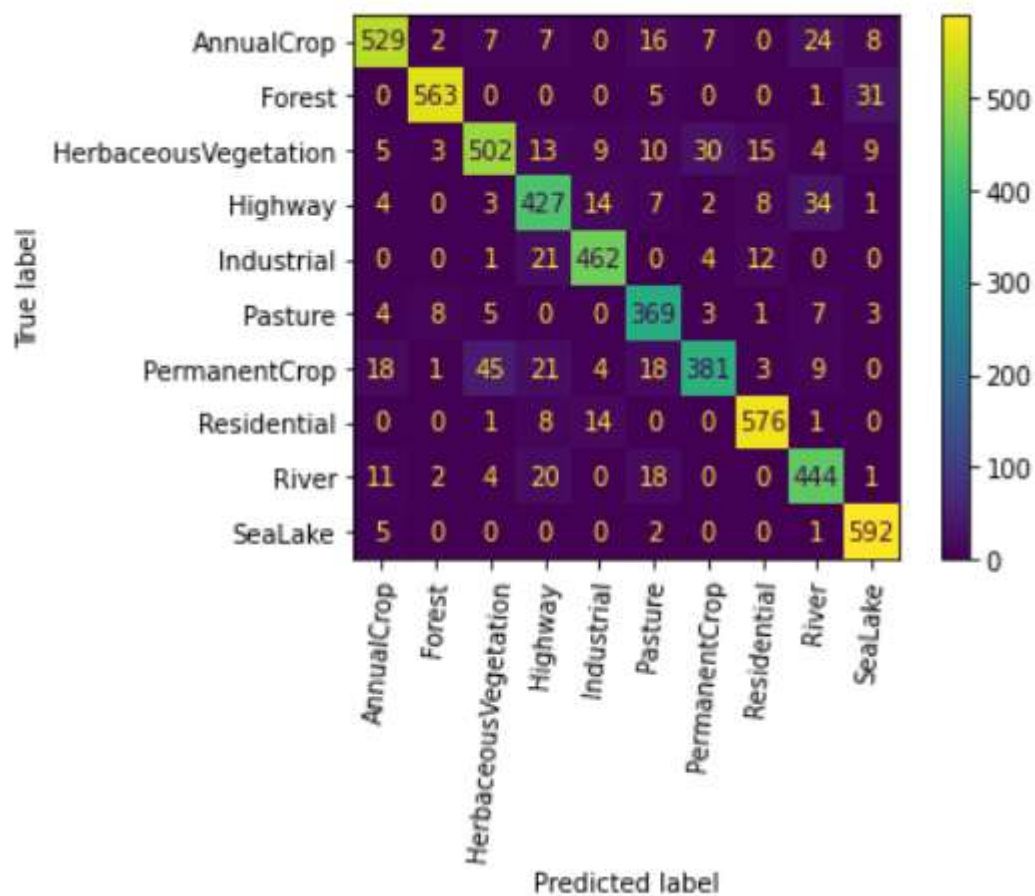
The plot of loss on the training and validation set is given below-



The plot of accuracy on the training and validation set is given below-



The confusion matrix heatmap of the test set is given below-



Inference from the experiment

The hyperparameters play a crucial role in training a deep learning model. I learnt this while playing with the model hyperparameters to train the CNN. Early stopping technique helped store the best trained model and prevent overfitting. It was also learnt that simply training the model for more epochs does not necessarily improve the model performance on the test set.