ICP 8
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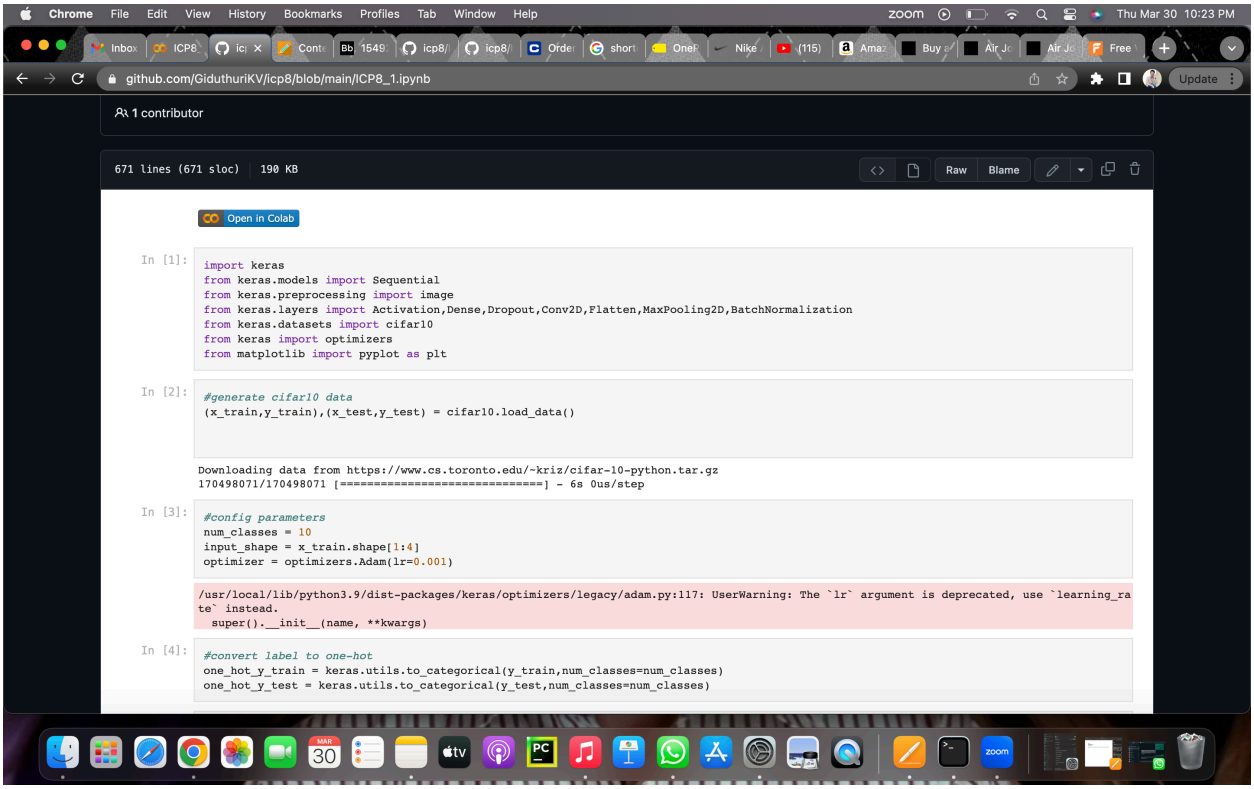
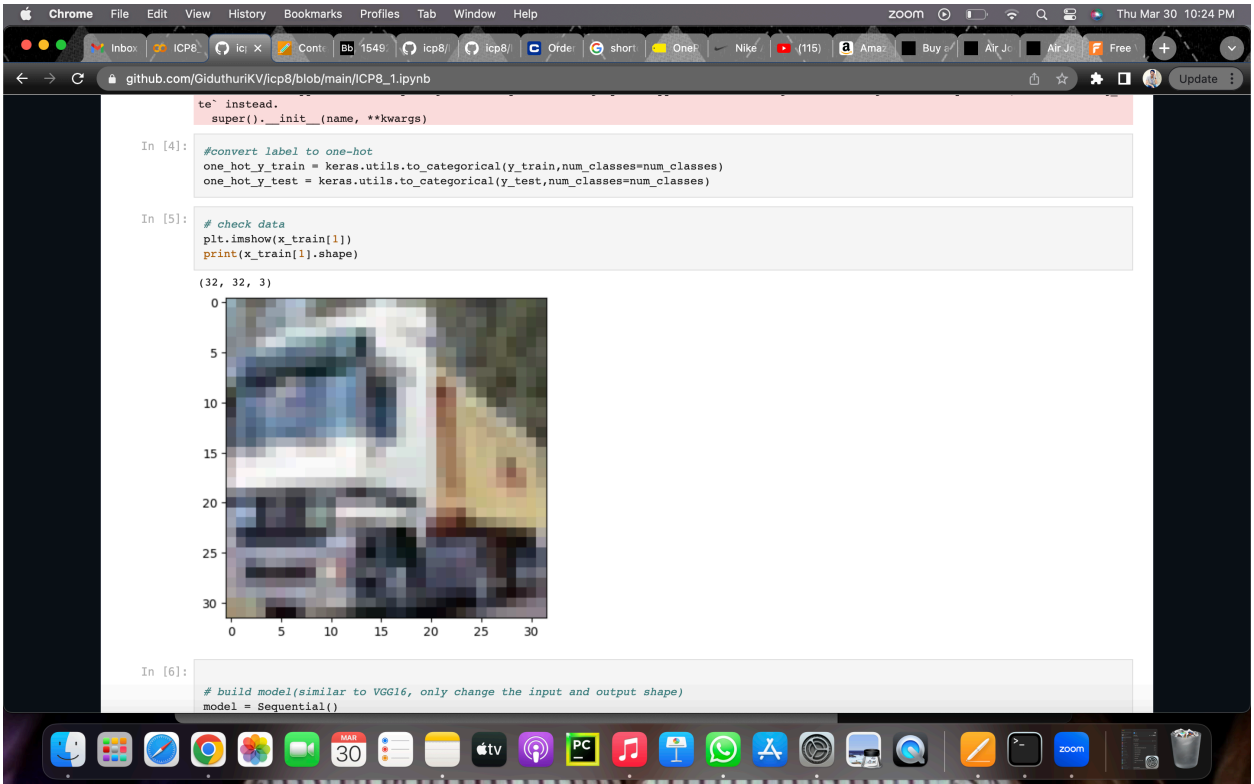
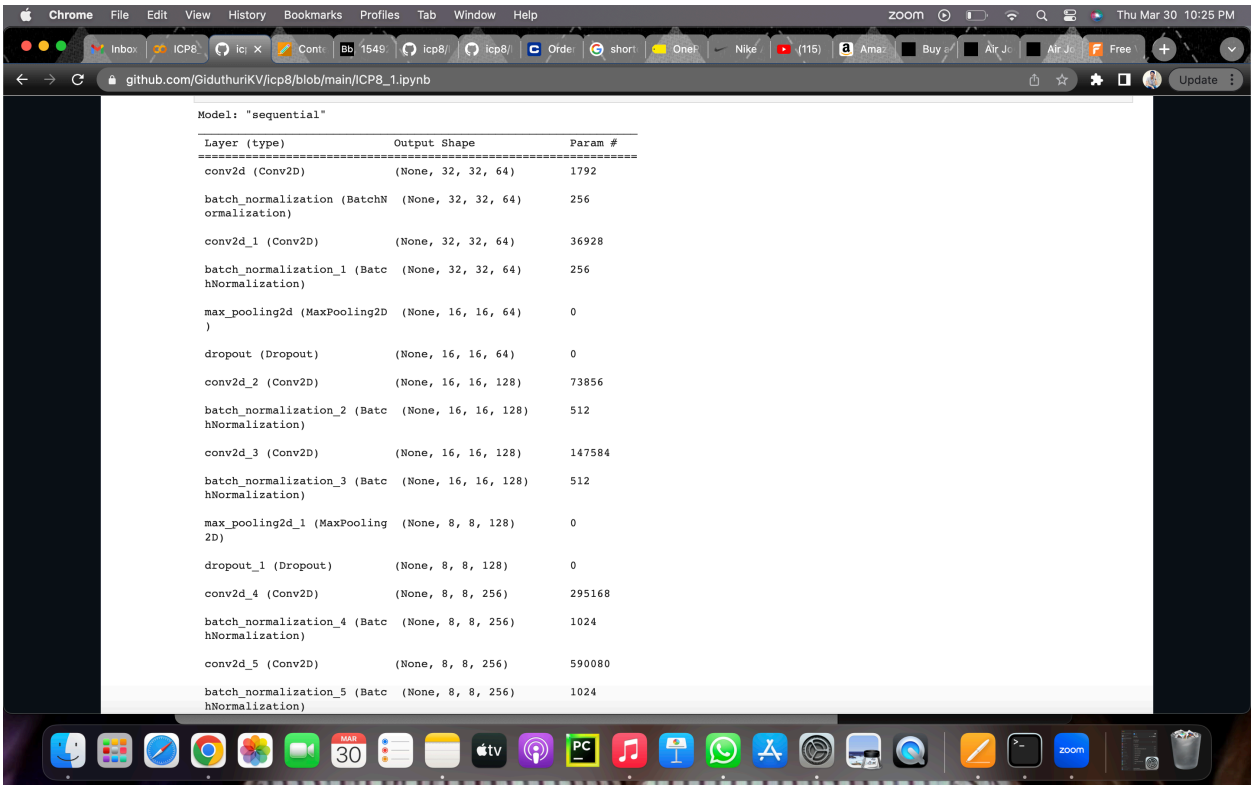
Loaded the cifar10 dataset and split into train and test data with 80% train data and 20% test data



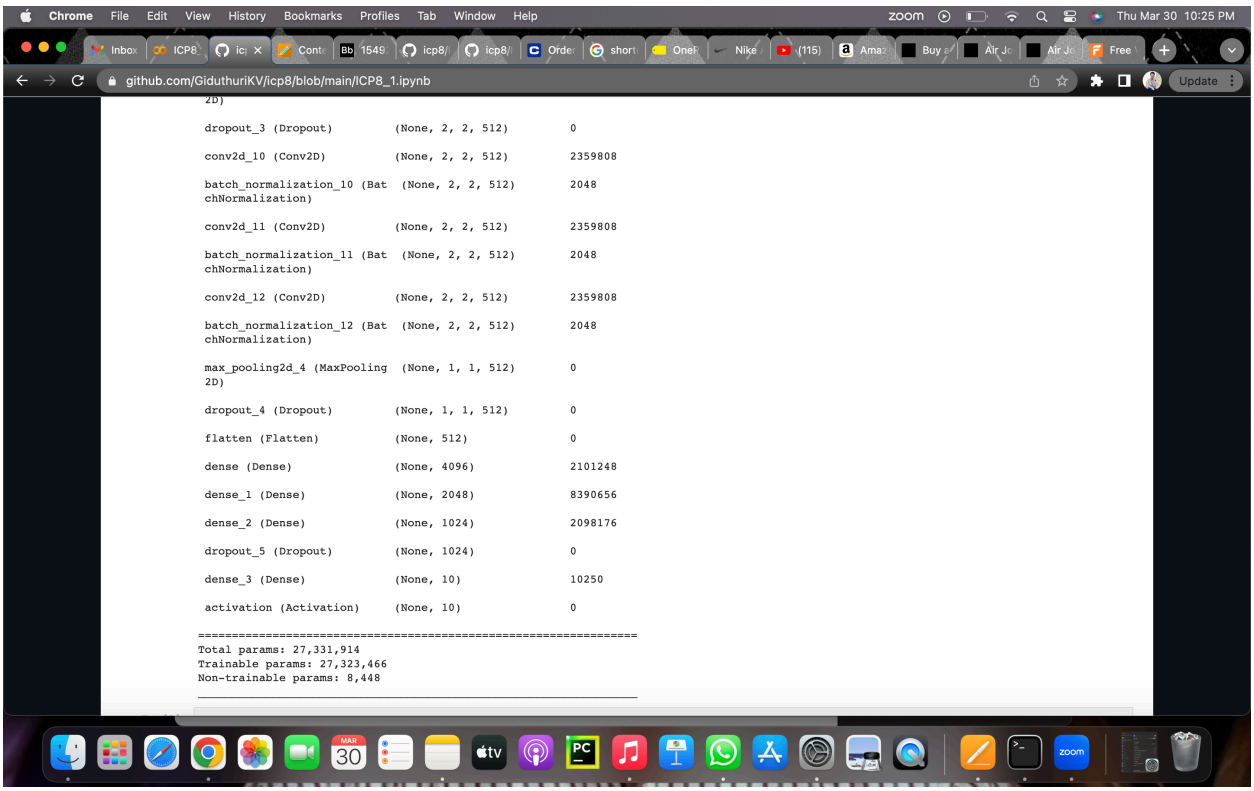


Now with to_categorical we are differentiating it into multiple categories.



Model: "sequential"

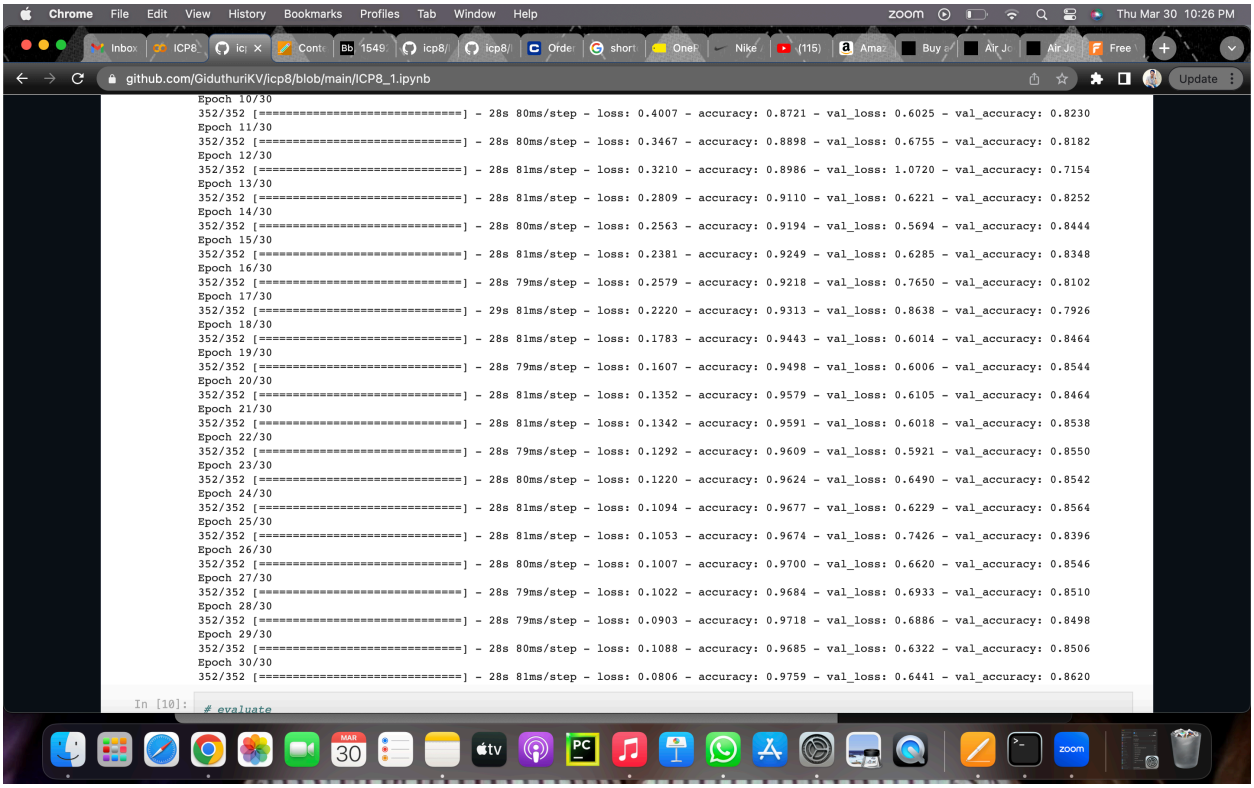
Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 32, 32, 64)	1792
batch_normalization (BatchNormalization)	(None, 32, 32, 64)	256
conv2d_1 (Conv2D)	(None, 32, 32, 64)	36928
batch_normalization_1 (BatchNormalization)	(None, 32, 32, 64)	256
max_pooling2d (MaxPooling2D)	(None, 16, 16, 64)	0
dropout (Dropout)	(None, 16, 16, 64)	0
conv2d_2 (Conv2D)	(None, 16, 16, 128)	73856
batch_normalization_2 (BatchNormalization)	(None, 16, 16, 128)	512
conv2d_3 (Conv2D)	(None, 16, 16, 128)	147584
batch_normalization_3 (BatchNormalization)	(None, 16, 16, 128)	512
max_pooling2d_1 (MaxPooling2D)	(None, 8, 8, 128)	0
dropout_1 (Dropout)	(None, 8, 8, 128)	0
conv2d_4 (Conv2D)	(None, 8, 8, 256)	295168
batch_normalization_4 (BatchNormalization)	(None, 8, 8, 256)	1024
conv2d_5 (Conv2D)	(None, 8, 8, 256)	590080
batch_normalization_5 (BatchNormalization)	(None, 8, 8, 256)	1024

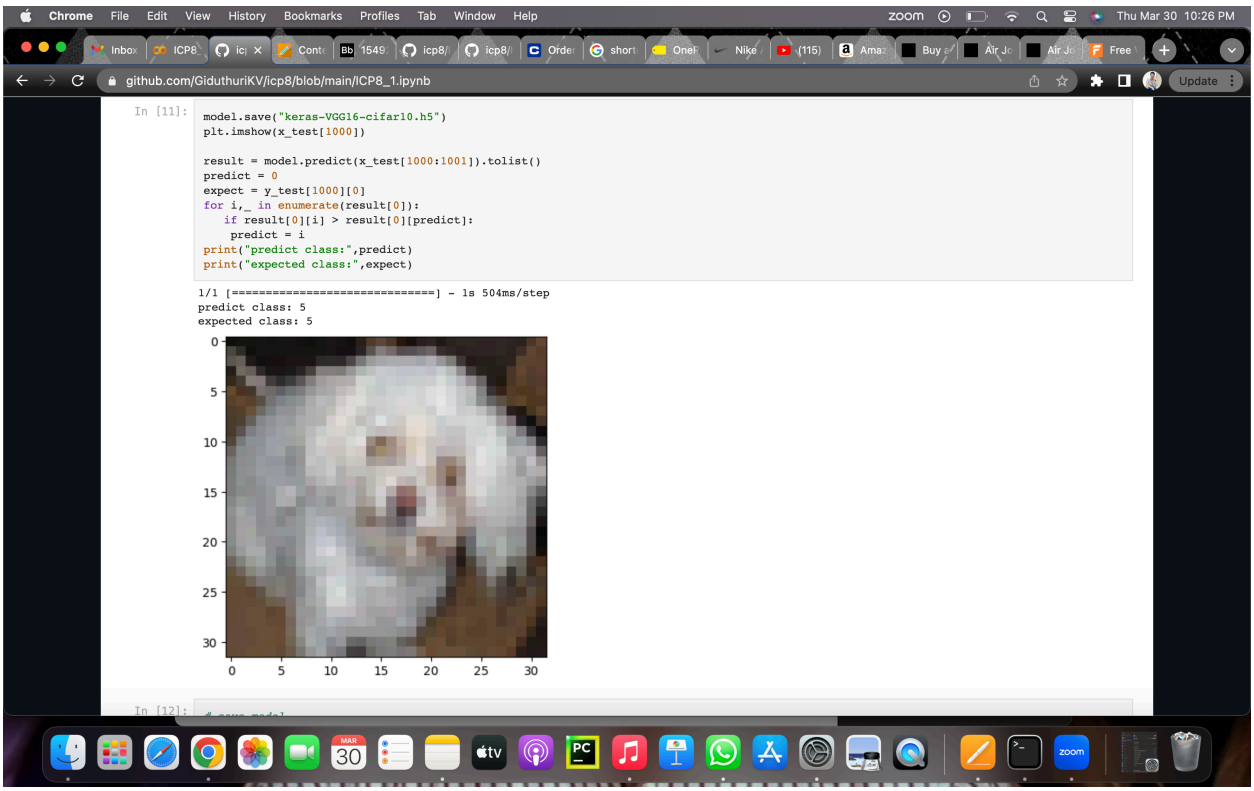


dropout_3 (Dropout)	(None, 2, 2, 512)	0
conv2d_10 (Conv2D)	(None, 2, 2, 512)	2359808
batch_normalization_10 (BatchNormalization)	(None, 2, 2, 512)	2048
conv2d_11 (Conv2D)	(None, 2, 2, 512)	2359808
batch_normalization_11 (BatchNormalization)	(None, 2, 2, 512)	2048
conv2d_12 (Conv2D)	(None, 2, 2, 512)	2359808
batch_normalization_12 (BatchNormalization)	(None, 2, 2, 512)	2048
max_pooling2d_4 (MaxPooling2D)	(None, 1, 1, 512)	0
dropout_4 (Dropout)	(None, 1, 1, 512)	0
flatten (Flatten)	(None, 512)	0
dense (Dense)	(None, 4096)	2101248
dense_1 (Dense)	(None, 2048)	8390656
dense_2 (Dense)	(None, 1024)	2098176
dropout_5 (Dropout)	(None, 1024)	0
dense_3 (Dense)	(None, 10)	10250
activation (Activation)	(None, 10)	0

Total params: 27,331,914
Trainable params: 27,323,466
Non-trainable params: 8,448

Using ImageDataGenerator we are fit and train the obtained image data then created the Sequential model using the optimizers we just optimized the model to train fast and fit and trained





And got the required results and plot the required graphs with the obtained results.