BEHAVIOUR CLONING

DATASET CREATION:

Dataset was created using a simulation software by Unity where we can drive a car on a track and the car has 3 camera on left,center and right and these camera give constant supply of images. Along with these images, we also receive a .csv file where all the images names left,center,right and their steering angle, speed are provided to us.
We use this images and steering angle data to design a model for us.

NETWORK ACHITECTURE:

I used a network which was inspired by Nvidia's Self driving car. It consisted of a Cropping layer in the starting which helped remove the bonnet and the upper part of the image which ahd trees and sky. Then each image was preprocessed using Lambda layer which divided the image by 255.0 and then normalized it by subtracting 0.5.

I used 5 Convolution layers of 5x5 with increasing depth from 24,26,48,64,128 with Max Pooling after every two Conv layers.

After Conv layers, layers are flattened and a sequence of 3 Dense layer are used from 100,50 to 1 where the regression value for steering wheel is calculated.

TRAINING APPROCH:

In my training approach, I trained on multiple epoch but found that network was doing really good at 3 epoch. So, I trained it till 3rd.
I also used Generators and fit_generator but it was taking 100 times the amount of time as compared to normal approach, so I sticked with the normal approach.