Real Time Analysis of Self-Driving Vehicles using Computer Vision

Sudeep S D[1], Rakshitha S[2], Dr. Manjunatha Reddy H S[3]

Students, Department of Electronics and Communications Engineering[1,2]

Professor and HOD, Department of Electronics and Communications Engineering[3]

Global Academy of Technology, Bengaluru, Karnataka, India

Abstract: *Computer vision technique plays a mighty role in predicting various steering angles, obstacles on the road, traffic signals, pedestrians and is capable of regulating a vehicle which is autonomous and can be controlled without human intervention. This technique brightens up the probabilities of immersing it into autonomous vehicle for its control and safety while driving. This paper demonstrates the usage of computer vision technique for the enhancement in control of self-driving vehicles. The image dataset is stockpiled via virtual environment i.e. usage of Udacity simulator where the center, left and right side of the vehicle on road is captured and this gathered dataset is employed to train the model. The model training is performed with the employment of convolutional neural network and NVidia model to extract the specificities of images while training. The trained and extracted model is inculcated again to the virtual Udacity simulator to test the accuracy of the trained model while driving the vehicle autonomously in the virtual environment. The accuracy of the trained model can be predicted by minimizing the loss percentage while training, this will be reflected once the vehicle is autonomously operated in the virtual environment. The assessment comprises of condensed research synthesis and evaluation. The conspicuous challenges of utilizing computer vision is the scarcity of real world datasets which ensures that there will be overreliance on the data induced from the virtual environments. Inclusion of real-world datasets in the future will give the researchers an upper hand in predicting the exact prediction model for autonomous vehicles.*

Keywords: CNN, self-driving, deep learning, accuracy, image augmentation, Udacity simulator, Nvidia architecture, steering angle.

Copyright to IJARSCT
www.ijarsct.co.in

DOI: 10.48175/IJARSCT-18815

ISSN
2581-9429
IJARSCT

116