Year 2019-20

PROJECT SYNOPSIS

Subject/ Sub. Code: Major Project/IS0602 **Credits: 06**

Batch No: A10 **Date: 13-01-2020**

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Project Title : Steering wheel angle prediction for self-driving cars

Broad Area : Deep Learning

Type of Project : Prototype

Objective :

The main objective of this project is basically to apply the concepts of Deep Learning and Convolutional Neural Network and simulating the working of self driving car so that, the car can drive autonomously without the human intervention. This allows the system to get a deep understanding about how to predict the steering wheel angle and maneuver itself according to the provided input.

Brief description :

Based on the latest statistical studies, the major reason for fatal road accidents were due to over speeding, alcohol consumption, driver fatigue and distractions while driving. All these factors are easily prevented and within human control. This problem can be overcome with the help of autonomous cars. As cars become more automated the reduction in road fatalities can be ensured.

For this project, the car is assumed to have automated transmission system which means there is no gear or clutch.

Three important factors for building self driving car are,

1. Steering wheel angle
2. Braking system
3. Acceleration system

Our primary concern is about the steering wheel angle and not the other two factors.

The overall project basically consists of 3 important steps.

1. Data Generation
2. Training
3. Testing

In data generation, images from center, left and right camera along with the steering command is taken as input and based on the video dataset available. In training, the model learns and understand about the patterns in the images provided to the convolutional neural network. In testing, based on the training outcomes the model improvises itself and predicts the steering wheel angle.

Given the sequence of images from front camera of car, our model predicts sequence of steering angle so that the car can move smoothly on road.

Software requirements :

Operating System	:	GNU/Linux, Windows 10, 8
Programming Language	:	Python3
Framework	:	Pytorch / Tensorflow
Training Platform	:	Google Colab / Kaggle

Hardware Requirements :

Processor	:	Quad core Intel Core i7 Skylake
Memory	:	8 / 16 GB RAM , 2 TB HDD

Internal Guide

Name : Suhas Bharadwaj R

Designation : Assistant Professor

Department : Information Science and Engineering

Remarks(if any):

Signature