Deep learning to find the steering angles & self applied break

Project Proposal

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**Deep Learning to find the steering angles & self-braking.**

**Abstract:**

**Background:**

Now a days transportation specially cars are part of human’s life. Cars now a days already include many semi-autonomous features, like it is able to assist in parking and also provides self-braking systems. And a complete autonomous vehicles are able to operate without human interaction and human control and it is becoming more of a reality. Recently NHTSA research shows the report that approximately 94 percent of accident are caused by the human error during driving. Self-driving vehicles have expanded dramatically over the last few years. Udacity has release a dataset containing, among other data, a set of images with the steering angle captured during driving.

The advantages of autonomous cars are so many ‘Like the sensors in self-driving car are always observing and it does not affect the state of the human (driver) in a sleep or angry mood etc. and can also scan in multiple directions simultaneously’.

**Working Ideas:**

We want to contribute in this manner that we want to find the steering angle from every aspect which will help us to find the movement of cars. The second challenge which we want to take is to find that how self-braking is applied.

An algorithm or software are required to reliably capture or monitor the data and make decisions on steering, braking, speed etc.

Our main focus is to predict the different steering angles by given dataset and implement it on a system to be executable to give some output. For this special purpose we will use ROS.

The following important steps will be taken to accomplish this project requirement.

* Computer Vision
* Deep Learning
* Path Planning

**Scope:**

Self-driving capability will surely add so many benefits in our life , It will provide easiness in our whole society , like providing transportation for those people who are not able to drive properly just because of the stress , under age or any physical disability. And the second reason is the traffic situation in Pakistan leads to design this project prototype, which aims at relaxing driver and creating an automated vehicle whose destination is dynamic.

**Papers under consideration:**

1. M. Bojarski, P. Yeres, A. Choromanska, K. Choromanski, B. Firner, L. Jackel, and U. Muller. Explaining how a deep neural network trained with end-to-end learning steers a car. arXiv preprint arXiv:1704.07911, 2017
2. Shuyang Du, Haoli Guo , Andrew Simpson . Self-Driving Car Steering Angle Prediction Based on Image Recognition.
3. M. Mueller, T. Voegtle , DETERMINATION OF STEERING WHEEL ANGLES DURING CAR ALIGNMENT BY IMAGE ANALYSIS METHODS. Institute of Photogrammetry and Remote Sensing (IPF), Karlsruhe Institute of Technology (KIT), Germany
4. Remaining downloaded papers are on the same repository for consideration.