AI Course

Team Project Action Plan

For students (instructor review required)

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Course

Artificial Intelligence

<Dark Web Crusaders>

Team Name

Team Leader/

<Mirza Toheed Arsal>, <Shamaem Saqib>

Members

<Traffic Sign Recognition System Using CCN>

Project Title

Goal

<Traffic signs such as speed limit, turn left, parking etc. play a significant role in managing the road traffic, avoiding any accidents and ensuring safety by conveying different rules to be followed on the roads. In this era of artificial intelligence, humans are becoming more dependent on technology. Many Multinational automobile companies like Google, Tesla, Uber, Ford, Toyota, Mercedes-Benz and many others are working on driverless car with help of enhanced technology. Traffic Sign recognition is very important and could potentially be used for driver assistance to reduce the accidents in driverless cars.>

Abstract

<With the increasing demand for the intelligence of vehicles in automobile industry, and increased production of self-driving cars by many multinational companies like Tesla, Google and many more, it is extremely necessary to detect and recognize the traffic signs automatically through computer technology. For this, neural networks can be applied for analyzing visuals of the traffic signs for cognitive decision making by automatic vehicles. Neural networks are the computing systems which act as a means of performing machine learning. In the system, a convolutional neural network (CNN) based machine learning model is built and trained for the recognition of traffic signs in the driverless cars.>

Training  
Method

<The steps which will be followed during implementation method are as follow:

1. Exploring Generalized Traffic Sign Dataset
2. Building a CNN Image recognition model
3. Training the model along with validations
4. Testing the trained model via test dataset

The approach followed for building this computer vision model involves importing the data set and loading it, performing exploratory data analysis (EDA) on dataset and visualizing dataset variables and their characteristics, Pre-processing data so that model is finely tuned, signing the model using CNN and training and testing the designed model with testing samples.>

<There are many generalized dataset of Traffic Signs are available such as GTSRB, GTSDB, BTSCB, BTSDB. But the most common dataset is the GTSRB (German Traffic Sign Recognition Benchmark) dataset because it contains large number of traffic signs images (50,000 images and 43 classes) of different variety, background, and color variation which help to model to perform accurately. The dataset is further spilt into training, testing and validation dataset. The training dataset is used to train the model. The validation dataset is used to evaluate the model. The test dataset is used to check whether the model make correct predictions or not and it is only used once the model is trained. Further, histogram is plotted to show number of images in each class, for training, testing and validation datasets.>

Data  
Processing

Expected  
Outcome

<After the implementation of this system, we will be able to recognize the traffic signs. The input of this system will be in the form of visuals (clear image / video) of traffic signs. And system will display the name of the recognized traffic signs

i.e. which sign is this? And what it tells us? In the form of text/audio>

<The system will be beneficial to reduce the road accident in driverless automobiles by detecting the road signs automatically.>

Role by  
Member

<Mirza Toheed Arsal -> Building, training, tuning and testing the model>

< Shamaem Saqib -> Exploring Generalized dataset, Data Pre- Preprocessing, Data Acquisition, EDA And User Interface>

Schedule  
Summary

|  |  |  |
| --- | --- | --- |
| Tasks | Days | Member |
| Exploring Generalized Traffic Sign Dataset | 1 | Shamaem Saqib |
| Date Acquisition and EDA | 3 | Shamaem Saqib |
| Building and Training the model on dataset | 3 | Mirza Toheed Arsal |
| Testing The Trained model | 1 | Mirza Toheed Arsal |
| User Interface | 2 | Shamaem Saqib |
| Final Testing | 1 | Mirza Toheed Arsal |

Comment &  
Assessment

<Comment and assessment by the instructor.>