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ijirset@gmail.com

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Lane Detection for Self Driving Cars Using Python

Prof V. N. Kukre¹, Ms. H. A. Shinde², Shreya Wadkar³, Samruddhi Takawale⁴, Ambika Moze⁵, Neeraj Borude⁶

HOD, Dept. of Computer Engineering, AISSMS Polytechnic, Pune, Maharashtra, India¹

Project Guide, Dept. of Computer Engineering, AISSMS Polytechnic, Pune, Maharashtra, India²

Diploma Student, Dept. of Computer Engineering, AISSMS Polytechnic, Pune, Maharashtra, India³

Diploma Student, Dept. of Computer Engineering, AISSMS Polytechnic, Pune, Maharashtra, India⁴

Diploma Student, Dept. of Computer Engineering, AISSMS Polytechnic, Pune, Maharashtra, India⁵

Diploma Student, Dept. of Computer Engineering, AISSMS Polytechnic, Pune, Maharashtra, India⁶

ABSTRACT: AI software in the car is connected to all the sensors and collects input from Google Street View and video cameras inside the car. The AI simulates human perceptual and decision-making processes using deep learning and controls actions in driver control systems, such as steering and brakes. In this self driving car the car detects the lanes on the road with the given instructions without any human control.

A self-driving car is almost entirely autonomous. It still requires a human driver to be present but only to override the system when necessary. It is not self-driving in the purest sense, but it can drive itself in ideal conditions. It has a high level of autonomy. Many of the cars available to consumers today have a lower level of autonomy but still have some self-driving features.

KEYWORDS: Self Driving, Artificial Intelligence, Finding Lanes, Gaussian Blur.

I.INTRODUCTION

We got the idea of this project when we were doing some work on Computer. We were watching a video on you tube where a man was showing how he actually designed a self - driving car which could detect lanes. So we suggested this topic to our guide and that's how this topic was finalized. So, in this way we got the idea of this project and later we discussed this idea with our Teachers and they also gave us the permission to do further activities according to this Idea

II.LITERATURE SURVEY

The problem of road or lane perception is a crucial enabler for advanced driver assistance systems. As such, it has been an active field of research for the past two decades with considerable progress made in the past few years. The problem was confronted under various scenarios, with different task definitions, leading to usage of diverse sensing modalities and approaches. In this paper we survey the approaches and the algorithmic techniques devised for the various modalities over the last 5 years. We present a generic break down of the problem into its functional building blocks and elaborate the wide range of proposed methods within this scheme. For each functional block, we describe the possible implementations suggested and analyse their underlying assumptions. While impressive advancements were demonstrated at limited scenarios, inspection into the needs of next generation systems reveals significant gaps. We identify these gaps and suggest research directions that may bridge them

III.DISCUSSION

The amount of data produced was large however the research was limited by a relatively small sample size. It is important to capture a wide range of differences in behaviors and that would be useful. ORD is a subjective measure of drowsiness that would state opinion about observable fact or event. There was a limited rating of ORD with use of single organism however going further improvements in drowsiness detection systems may be expected due to several factors, including improved applications, the addition of unnoticed features from heart beats and devices used for tracking the information, and the environmental conditions such as day and circumstances. A certain crowd drove at the same time wherein the time utilized for rest / sleep was same, removing time of as useful variable for training. The low sampling rate of device could not provide the accuracy of some dependent measures

IV.PROPOSED ALGORITHM

Step I: Installing Anaconda Distribution. Download Anaconda from anaconda.com and download the latest python version in your Windows/Mac/Linux. Once download is complete start the installation process in your respected OS. Installing Text Editor Atom. Download Atom from Atom.io and download the latest Atom version in your Windows/Mac/Linux. Once download is complete start the installation process in your respected OS.

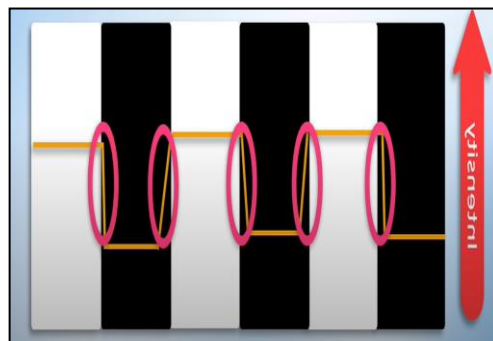
Step II: Creating a Folder and File. Create a folder (Finding-Lanes) and then a file(Lanes.py) inside it. Now download and install the image you need for your code.



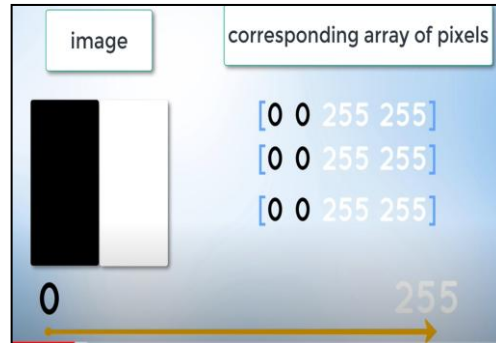
(Fig 1.0)

Step III: Gray scale Conversion

Identifying sharp changes in intensity in adjacent pixels Converting original image to gray scale has its benefit. We have to find yellow and white lanes, and converting original image to gray scale increases the contrast of lanes with respect to road.



(Fig 1.1)



(Fig 1.2)

Now we convert our image to gray scale



(Fig 1.3, 1 channel)



(Fig 1.4, 3 Channel)

Step IV: Gaussian Blur. Reduce image noise.



(Fig 1.5)



(Fig 1.6, Blur Image)

Step V: Canny. Measure adjacent change in intensity in all directions x and y . Used to trace the strongest outline in the image .



(Fig 1.7)

Now we specify this region as the area of interest.



(Fig 1.8)

Step VI: Bit wise_ and :

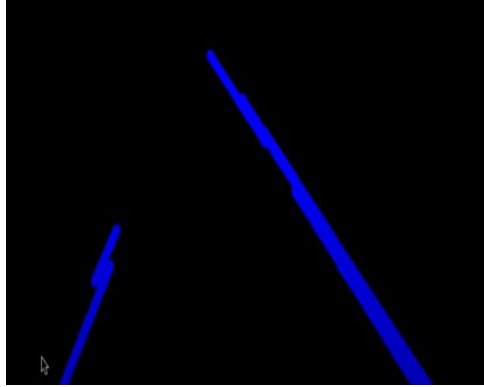


(Fig 1.9)



(Fig 1.10)

Detect the blue lines on our image.



(Fig 1.11)

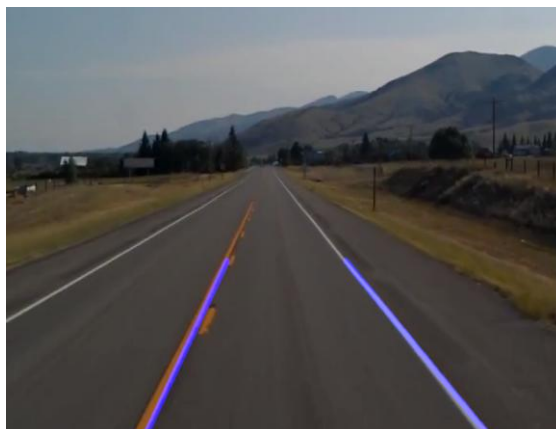
After this we merge these lines with the color image.



(Fig 1.12)

Step VII: Download and the video in the code.

V.RESULT



(Fig 1.13)

VI.CONCLUSION

In just the past few years, AI has gone from being nearly forgotten to becoming the largest Research and Development (R&D) investment of many organizations across the world. While setting up the genuine undertaking and report of the equivalent, we had a disarray and that how we'll begin the venture and what we'll do in the event that it doesn't work consummately, etc. Absence of inspiration was ascending in our gathering yet our venture manage guided us and encouraged us in finding the right sources which are needed to achieve our task. First we thought we'll complete our project using Java language but after studying Java a little bit deeper, we've got to know that Python is more easy and fast and more efficient language as compared to Java. At that point we turned towards Python and in the wake of picturing the code and the bundles that are available in Python language we got completely energized and roused to do further exercises to finish our venture.

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