Driver Drowsiness Detection

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Abstract —

As we are come across a lot of road accidents on everyday basis we tried to research why was this happening and we came across the biggest and most common reason for this is drowsiness of a driver while driving a vehicle.And that is the reason we are developing this system called 'Driver Drowsiness Detector' that will alert the driver through an alarm if he/she is drowsy and is about to close eyes.

Keywords —
python,face recognition,numpy,pycharm,EAR(eye aspect ratio),OpenCV.

INTRODUCTION

The name of the project is 'Driver Drowsiness Detector' as the name itself suggests that it detects drowsy eyes of the driver when he/she feels sleepy while driving then our system will alert the driver with the help on an alarm and this will probably prevent a potential accident .Basically the web camera fitted on the steering will detect the closing eyes of a driver and ring and alarm as our system suggests.
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I. LITERATURE REVIEW

We did some case study on the number of road accidents taking place on daily basis world wide and we found that 52% vehicles result into accidents annually.And 29% accidents occurred in recent survey of 12 months and 7% of it result into deaths .To prevent this there we found the urgency to build this system.

II. METHODOLOGY/EXPERIMENTAL

A. Characterization/Pseudo Code/ Testing

Characterization-

Our project detects the eyes of the driver and manipulates the data and calculates the eye aspect ratio which tells that whether the driver is feeling drowsy or not.And if he/she is feeling drowsy the system will alert the driver by ringing an alarm and help him/her focus on driving rest of the journey.

Pseudo Code-

1. .Installing the libraries for python like numpy,scipy,playsound,face recognition ,OpenCV and etc in Pycharm.
2.Takingthelive video of the driver through camera.
3.Processing the video frame by frame which will be declared at the start of the code.
4.Processing each frame and extracting the coordinates of eyes i.e our region of interest .
5.Processing the coordinates and calculating the eye aspect ratio.
6.Setting the threshold limit for the alarm to ring.

Testing-
We will be setting a web camera at the dashboard of the car infront of driver that will be connected to our system through wires and all the actions further will be executed on laptop

III. RESULTS AND DISCUSSIONS

The main and very foremost discussion we had was about the algorithm to detect the face and then ring the alarm accordingly.

IV. HELPFUL HINTS

A. References

1.Youtube for learning about libraries.
2.For designing the algorithm we read few articles which were available online on the desired topic.

V. LIMITATIONS

Our system will not be able to detect the face of the driver properly when the surrounding is dark or if the driver is wearing sunglasses.Also the user has to use the system with default alarm tone and other settings and hence no customization is possible.

VI. FUTURE SCOPE

We can make the system more compact and easy to use.
It Can be used widely in Autonomous Vehicles Adding more apparatus like IR Camera and Dot Projector.
It can be more Accurate.
Can be integrated in the Vehicle system Itself and Proper UI can be created.
Using AI we can suggest some good stuff to the driver like some Entertaining songs he can play to keep him awake.

VII. CONCLUSION

The biggest conclusion is we all got to know how deep and huge technology is it is never enough of knowledge one can have it just keeps on adding.And the second main thing we can conclude is a good team work always results in a good overall work.

APPENDIX

PYTHON,PYCHARM,OPENCV,NUMPY,SCIPY,PLAYSOUND.

REFERENCES

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