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ACTIVE GLARE SUPPRESSION SYSTEM

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Abstract -This is a smart windscreen for vehicles to eliminate the difficulties from light intensities while driving ,mainly sunlight during daytime and the light glares from opposite vehicles during night. A light modulator having a photo chromic layer will be present on the windscreen. A control circuit gather information about the position of eye Using a camera mounted inside the vehicle and also about the intensity and position of the glare from the camera outside the vehicle. Based on this information a particular portion of the screen gets darkens and prevents the glare from reaching the eye and causing difficulty.

KeyWords: smartwindscreen, glare, intensity, photochromic, camera, circuit, eyes

1.INTRODUCTION

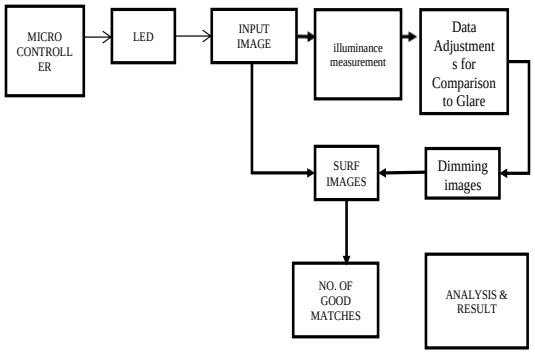
In our day to day life travelling is something that can't be excluded, but accident rates are increasing due to many factors mainly lack of proper security reasons. Detecting and tracking vehicles is important and a proper system isn't introduced till date. The headlight during the night travel plays a major role. While driving there may be an irritating situation due to the headlight lamp focus from the opposite vehicle. It may cause temporary blindness that leads to collision or sometimes it may lead to accidents. At day a large number of visual features can be used to accomplish this task, at night only the vehicle lights remain to be reliably detected in a camera-based system. These detection should preferably be tracked to provide more constant results. This work focuses on tracking vehicle light sources at night, mainly for use in advanced headlight control. automatic control of high beams to not blind other drivers on the road.

There is a manual way to adjust the headlight focus but it is difficult to adjust manually. Here we present a smart screen that is mounted on the wind shield which works whenever the vehicle is turned ON. The pixels of smart screen provide a shield that is similar to the shield from sunglasses. Position of pixels to be triggered can be controlled. As the vehicle's brightness can be calculated with image processing and measures density for datasets.

2. THE SET UP

The 1st part is the eye position detection. For this we mount an infrared led camera device inside the vehicle which gives the information about the eyes. Analyzing facial expression, eyelid activity, and head movements can be used to assess the fatigue level of drivers. Driver's eye movement speed is used to assess driver's fatigue level. Illuminance meter configured with multiple receptor heads was used to measure the amount of light from the approaching vehicle which is mounted outside the vehicle. A microcontroller is implemented to establish the working and control the system. A photo chromic layer attached in the windscreen is the main part of the system. Which has lots of pixels in it,and based on the information the particular pixel darkens for enabling smooth viewed driving.

BLOCK DIAGRAM



3.WORKING

As mentioned an infrared led camera will be mounted on the inside of the vehicle which detects the information and position of the eye and it compares with the information from the camera outside the vehicle which detects the position and intensity of the light and based on these informations the microcontroller decides the part of the windscreen which is to be shaded and sent signals to that particular pixels containing the part to darken and this lasts till the glare detected surpasses the vehicle and it automatically returns to normal stage.

4.THE LED IMAGE MODEL

The same can be showed using a simple circuit model where the windscreen is depicted as a an led panel where each led represents each pixels, and the light input can be represented by pre programmed images, where different images provided for different glare scenarios.

4.1 COMPONENTS

ARDUINO UNO

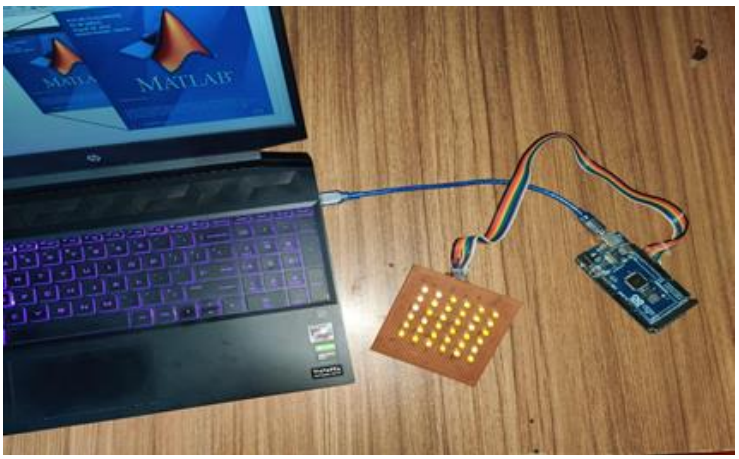
The Arduino Uno is the microcontroller board used. It has 14 digital input/output pins, 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It can be simply connected to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

LED PANEL

LEDs can be mounted on a bread board in rows and columns where each led represents a pixel.

CABLES AND CONNECTORS

USB one end cables connected to the panel via the Arduino and cables or connectors USB type vcan be connected to the computer system where the image inputs will be provided.



Prototype

5. SOFTWARE OVERVIEW

Pre-defined images of different situations of glare is provided as input for the MATLAB programme. The out put is given to the USB out connected to the LED panel Via the microcontroller, here the Arduino. In the panel the LED lighting is arranged in a pattern of adjascent LEDs, where each LED represents a pixel. When the programme runs, a particular image is selected as input and according to the image the controller decides where the panel is to be lighted, the lighting of the panel represents the darkening of the chromic layer on the windscreen.

6.MAINTENANCE

The objectives of this maintenance work is to make sure that the system gets into work all time without any bug. Provision must be for environmental changes which may affect the controller or electronic system of the vehicle. This is the main role of maintenance in the system. Nowadays there is the rapid change in the software and technology. Due to this rapid change, the system should be capable of adapting these changes for better functioning and accident free. In our project the process can be added without affecting other electronic parts of the vehicle. Maintenance plays a vital role. The system should be able to accept any modification after its implementation. This system has been designed to favour all new changes. Doing this will not affect the system's performance or its accuracy in any way. This is the final step in system life cycle. Here we implement the tested error-free system into real-life environment and make necessary changes, which runs in an online fashion.

7.CONCLUSIONS

We presented a study on the applicability and the benefits of an anti-glare system . The accident rates are increasing day by day and several reasons have been studied to be the causes where actions could not be properly taken. In that a notable problem has been identified and found a solution. The above system is an affordable and minimistic approach to the problem. The laws are also against implementing tinder on whole windscreen and darkening it, so this will be a practical solution. it seems only a matter of a few years until such a system will be realized at a cost of production that is low enough to bring benefits for both the driver and the manufacturer. Indeed, the classic sun visor is outdated compared to the other, of a modern vehicle and is not contributing to the safety of the driver as much as a digital sun visor. The merit of the project consists in the fact that a large variety of knowledge from different domains was used and combined in order to propose a working product that will increase the safety of all traffic participants .

REFERENCES

[1] Kher, S. Bajaj, P., Fuzzy control of head-light intensity of automobiles: design approach, 37th SICE international conference.

[2]. Bajaj, P., and Kher, S., “Smart Control of Headlight Intensity of Automobiles for Improved Night Vision,” 38th SICE Annual Conference, vol. A247

[3]. Kenji Kobayashi, YukimasaTamatsu, Special application vehicle head light systems.

[4]. R. Kanai, Y. Kamitani and U. Utrecht, Time- locked Perceptual Fading Induced by Visual Transients, unpublished. [16]. S. Aishwarya, Bright Headlights: A Major Cause of Accidents, The Hindu, Online edition, May 02, 2006.

[17]. C. Guttman, High Intensity Headlights could cause road accidents by dazzling oncoming drivers.