

Chapter 8

Eye Ball Detection Using Labview and Application for Design of Obstacle Detector

Devkant Swargiary

Don Bosco College of Engineering & Technology, India

Joydeep Paul

Don Bosco College of Engineering & Technology, India

Ruhul Amin

Don Bosco College of Engineering & Technology, India

Hemashree Bordoloi

Don Bosco College of Engineering & Technology, India

ABSTRACT

Eye ball detection can be used for controlling certain applications. In this chapter, we describe the formulation of an eye ball detection system for design of an obstacle detection and avoidance technique. The obstacle detector is used with a vehicle and works by determining the location of an obstacle in the vicinity of a test object. The obstacle's distance is gauged from the test object in terms of corresponding voltages. The system uses image processing to detect the eye of the driver. If the eye of the driver is closed for a longer period than the threshold period then the image processing block sends a signal to the sensor which automatically takes control of the test vehicle.

INTRODUCTION

“Eye Ball Detection Using LabVIEW & Obstacle Detector” is all about taking control of the car when it senses that the driver is asleep. **“Eye Ball Detection Using LabVIEW & Obstacle Detector”** uses image processing to detect the eye of the driver. If the eye of the driver is closed for a longer period than the threshold period then the image processing block will send signal to the sensor which will automatically take control of the test vehicle.

It will detect obstacles such as other vehicle to avoid any kind of collision with them. Moreover it will detect the end of the road using edge avoider so that the car doesn't fall off into the valley or into a deep crater. Thereby it will find the shortest parking distance & it will park the car safely.

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To monitor the condition of the driver we have used a camera. The camera will detect the movement of the eye ball of the driver. If the eye of the driver is closed for more than the threshold period of time then the obstacle sensor situated at the corners of the car will be activated. It will help the car to evade the other vehicles as obstacle (Reve & Choudhri, 2012).

For eye ball detection we are using LabVIEW software. With this software the camera can be made to track the eye ball of the driver. The threshold time is set regarding the blinking of the eyes of the driver and for inspecting in the vicinity in the interior of the car. Suppose this threshold time is around 5 seconds. If the eyes of the driver are closed for more than this threshold time of 5 seconds than a signal will be fed to the comparator which pass on the signal to the microcontroller. The microcontroller will eventually alert or activate the sensors. The sensors obstacle detector to be precise will sense the obstacles such as other vehicles so as to avert collisions (Kianpisheh, Mustaffa, Limtrairut & Keikhosrokiani, 2012).

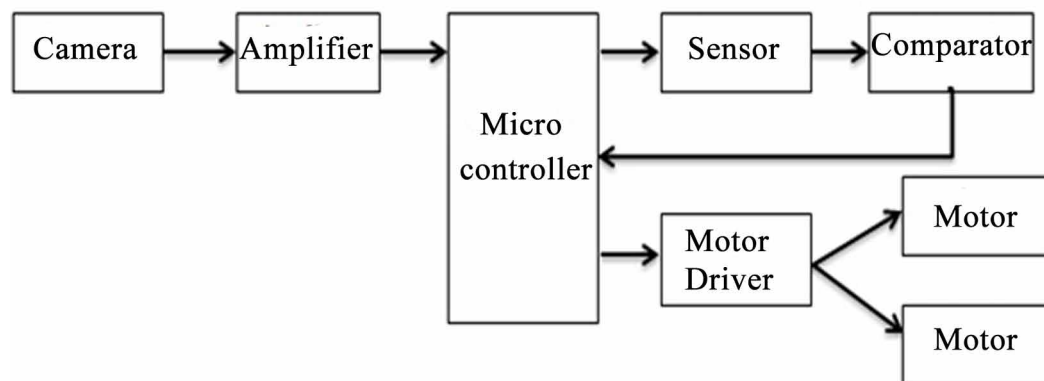
The obstacle detector in this case is a circuit made with an IR sensor. In order to obtain a higher accuracy sonar sensor can be used in place of IR sensor. Figure 1 represents the block diagram of the proposed system.

We have designed a program entitled “Eye Detection using LabVIEW”. Through this program we can control any system using the movement of the eye. The output of the program is accessed through the data acquisition card. When the eye of the user is open then we get a voltage of 5V and when the eye is closed then we get a voltage of 0V. By interfacing this program with a microcontroller we can control any kind of system

Image Processing Using LabVIEW

- The image processing block will capture the image of the driver in the 1st stage. The image will be fed to the buffer which will provide some temporary memory location for the continuous captured image acquired by the previous block, so that overlapping of the image doesn't takes place (LabVIEW, n.d.). Image processing block is shown in Figure 2.
- It is tougher to process a 3-D image (colour image or RGB) compared to a 2-D image (gray image). At 1st we will try to process a 2-D (gray) image.

Figure 1. Block Diagram of Intelligent Brake and Parking Assist System



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