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Automobile Assistant Using Labview

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Abstract: ***Automobile assistant is using NI-myRIO based ultrasonic range sensor, safety feature which aids in monitoring the road for alerting the driver when an obstacle approaches, whenever the driver is distracted from driving. Face recognition is one of the futuristic paper of all time whether it is used for security or safety issues even it came down to the level of face locking in Smartphone's but none of these have ever tried to involve the smart face detection system inside the cockpit of a modern day car. It will be a more stable and sustainable system overall if an automated system is always tracking and monitoring where the driver's face is looking at and provide continuous alerts based on the position of the driver's face in a three dimensional axis. This paper demonstrates how to interface a MY-RIO with a USB camera to monitor the facial movements and to provide alerts that warns a driver whenever he's distracted from the road.***
Keywords: NI-myRIO, Ultrasonic range sensor, LCD display, face recognition using HD web camera, buzzer.

I. INTRODUCTION

This Paper is mainly concerned about assisting the driver about oncoming obstacles, when driver is not focusing on the Road .Yes all know that it is impossible to completely eradicate accidents, but it can reduce the numbers to a considerable extent through implementation of engineering.

This paper would like to go for only the electronic package consisting of front facing camera which is to be fixed in the dashboard, connected to the camera and ultrasonic sensors, which are to be fixed in the front bumper .If needed that can install the same in a scale model car for prototype project demonstration. This is availability of ultrasonic sensors and HD web camera for image processing.

A. Ultrasonic Range Sensor

MB1010 (high performance sonar range finder) with 2.5V-5.5V power which gives very small to long-range discovery and arraying in a very small wrap up. It detects obstacles from o-inches to 254-inches (6.45-meters) and gives sonar range information from 6-inches out of 254-inches with 1-inch degree. The line arrangement comprise are pulse width output, analog voltage output and RS232 serial output. It can features of this paper ultrasonic range sensor is Analog, (Vcc/512) / inch, Free run operation can continually measure and output range information, Designed for protected indoor environments. In this paper the application for using ultrasonic range sensor is long range object detection.MB1010 ultrasonic sensor which interfaces with myRIO will be taking the output in analog output (inches).in this paper that taking two sensors which is connected to daisy chain process with bread board and interfaces for using with jumper wires range sensors to myRIO.

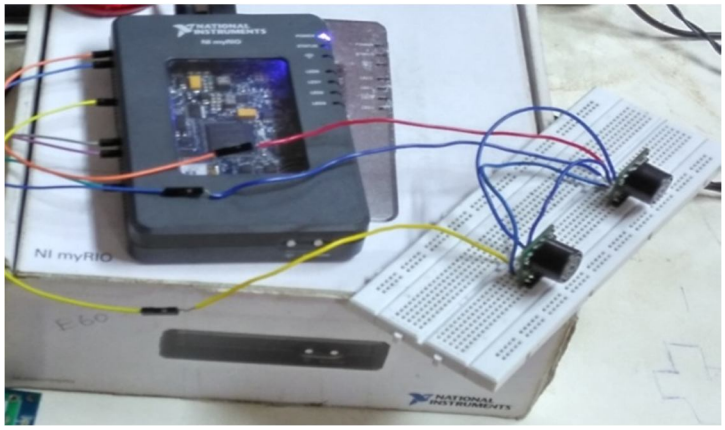

Figure 1 Example of ULTRASONIC SENSOR INTERFACE WITH NI-my RIO

B. NI-myRIO

It is a embedded hardware device that introduces students to industry proven technology and allows to them real, complex engineering systems more quickly and affordably than ever before. MyRIO reach is expanding with new software features and partner products. NI myRIO is used to improve student learning in controls, robotics, mechatronics, and embedded as well as empower student design. The National Instruments myRIO-1900 is a moveable reconfigurable I/O tool. This file holds pin outs, connectivity in order, size, rising orders, and stipulation for the NI myRIO-1900.

This product was experienced and complies with the narrow supplies and limits for electromagnetic compatibility (EMC) affirmed in the manufactured goods provision. These supplies and limits provide sensible defense next to damaging meddling. When the product is operated in the intended ready electromagnetic surroundings. This product is intended for use in profitable locations. There is no assurance the dangerous intrusion will not occur in a exacting fitting or when the product is connected to show thing. To reduce interference with radio and television reception and prevent intolerable performance squalor, install and use this product in strict agreement with the instructions.

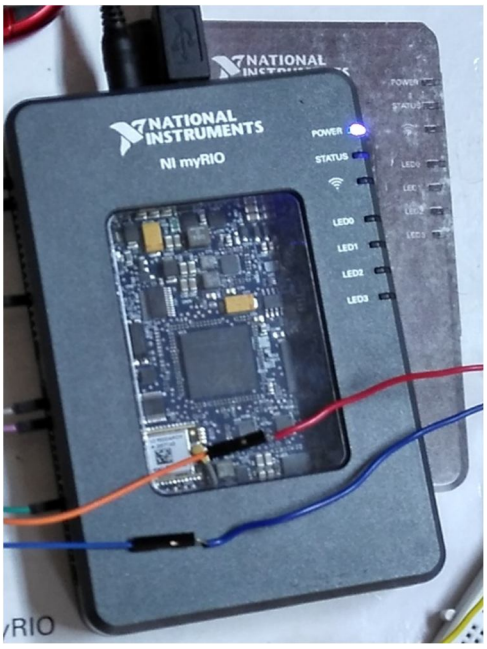

Figure 2 Example of NI-my RIO

C. Image Processing

Image processing is based on lab view .It has two major parts for monitoring the face of the driver.

1) Acquiring

2) Vision Assistant

D. Acquiring part

Initially camera capturing image for acquiring progress. that image to be monitoring there location of face .that face capturing part to intimated there external camera control element are fixed .this kind of image process by their particular loop of their program. So if this signals can be in analog output format .so this outcome product will connected with myrio kit port. Input signal are generating with myrio. Then it also get acquiring there outcome of monitoring.

E. Vision Assistant part

Vision Assistant is fully used for monitoring the face eyeball monitoring. it will be capture there acquiring image .then configuring face eyeball location on their image. This configuration to compile for Labview language. Finally it will be compiling there camera can assist there object. This process should be possible to any kind of operation's there will be use in multiple processing. We know implemented in automobile assistant. This capturing image is monitoring continuously & also intimate which level deviations will

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be occurred.

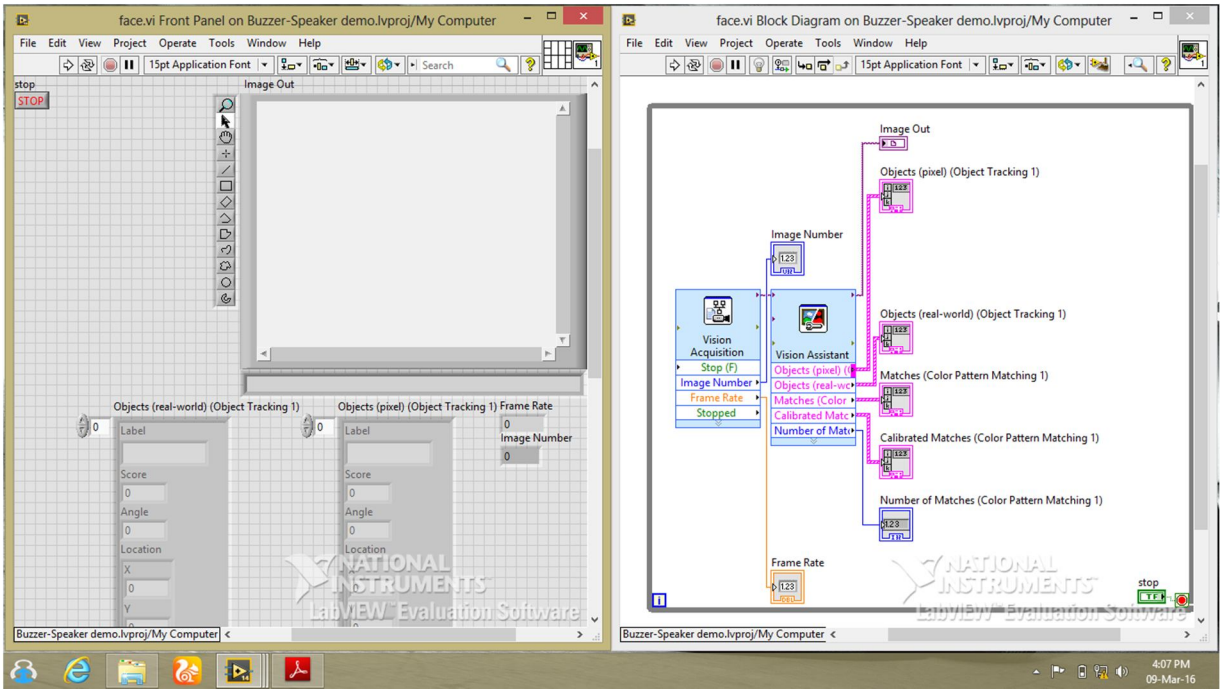

Figure 3 Example of Image Processing through Vision Assistant

F. LCD Display

An LCD Character display provides an excellent means for your Labview block diagram code to display measurements, status and conditions with ASCII character strings. The LCD character display also provides visual feedback for a user interface. Figure pictures the NI myRIO embedded system lit LCD character display which supports three different serial communications standards; this chapter cover the SPI and I^2C-bus interfaces to the display.

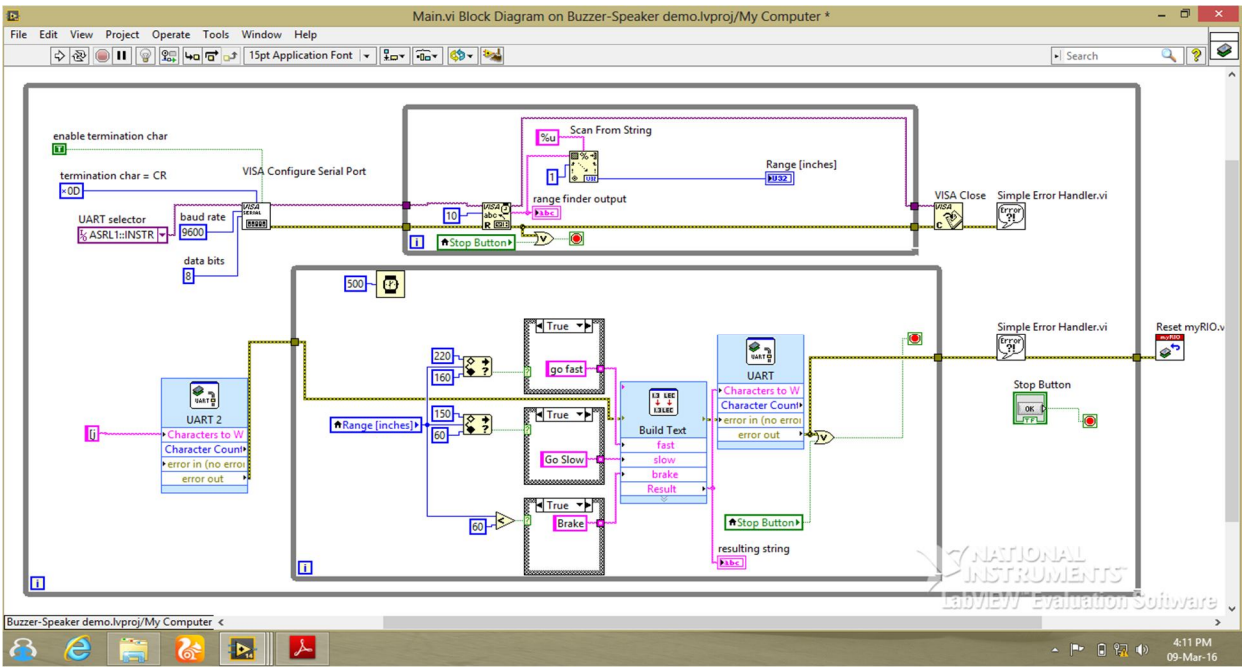

Figure 4 VI Block Diagram –UART LCD Display

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G. Buzzer

Pilot lights and Buzzer are panel mounted device assemblies consisting of the housing, an internal lamp or buzzer, terminals, and a cover. Applications include industrial control panels of all types, equipment indicator panels, status alarm indicator. The buzzer volume is 95dB and 10cm (3.94”), the current is 20mA.

22S = Ø22mm (Ø0.87”) standard size.

Two types 1.BZ-Buzzer 2.FBZ-Flashing Buzzer.

Figure 5 Megatronix – BP – 12Volt 80db Continuous Output Buzzer Piezo Beeper

H. Proposed System

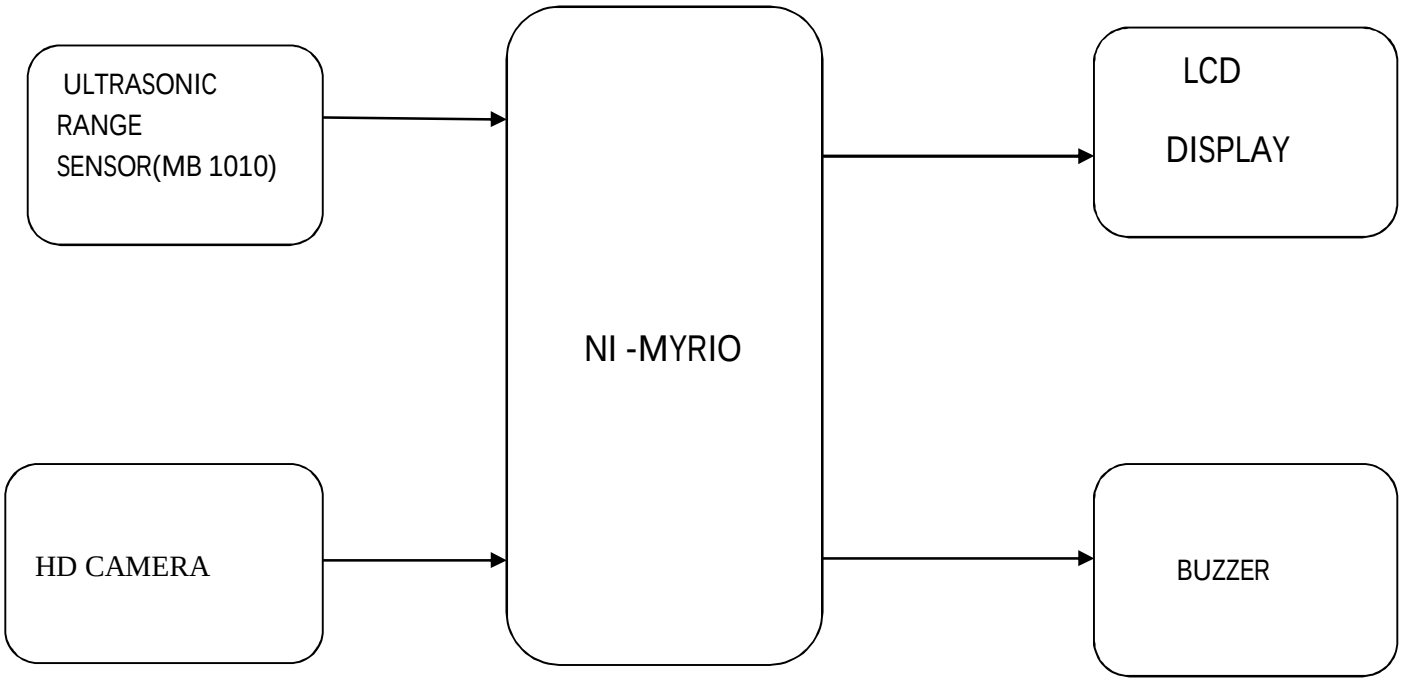

Figure 6 Blck Diagram

I. Working Process

First we are going to measure the distance of the obstacle by using ultrasonic sensor MB1010 (LV MAXSONAR –EZ1 beam patter) which is interfaced by myRIO training kit using Labview and we should convert the feet in to the inches. Because the feet range

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should be minimum so it will not be monitor by the software. The acceptable range to sense the software is (0 to 255inches) and 15 degree circumference.

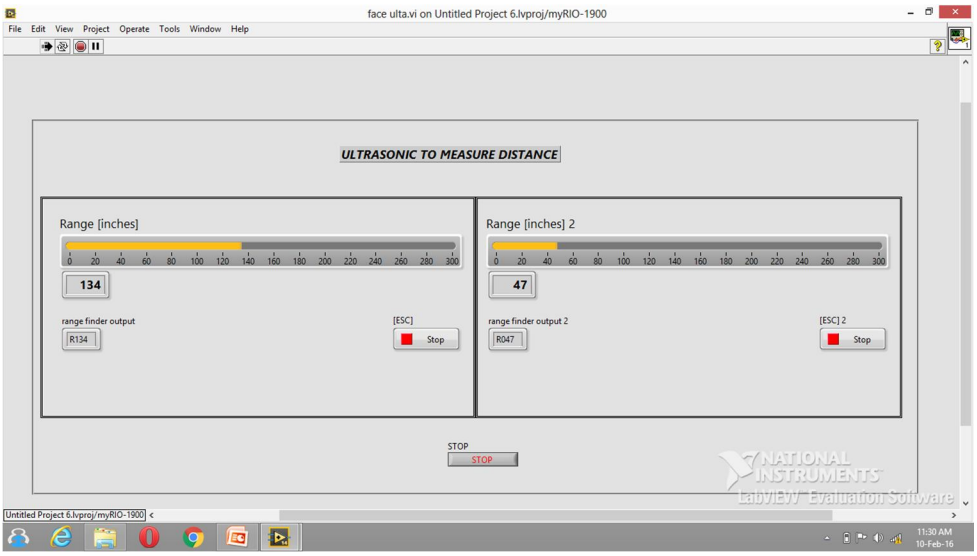

Figure 7 VI Front Panel-Ultrasonic To Measure Distance of obstacles detection.

J. Face recognition

Face monitoring to monitor the face of the driver. By using vision assistant tool to handle this job. We were fixing the high definition camera in front of the driver. This is used only for the purpose to capture the face of the driver. Capturing the image which getting through the vision assistant. We match the patterns (face and location of eyeball, nose) of the driver. To take the output of with the PL22 buzzer.

Both of the ultrasonic and face detection outputs, there is one will be change where getting the output in LCD visual monitoring and buzzer. we implement the real time car which implement our project.

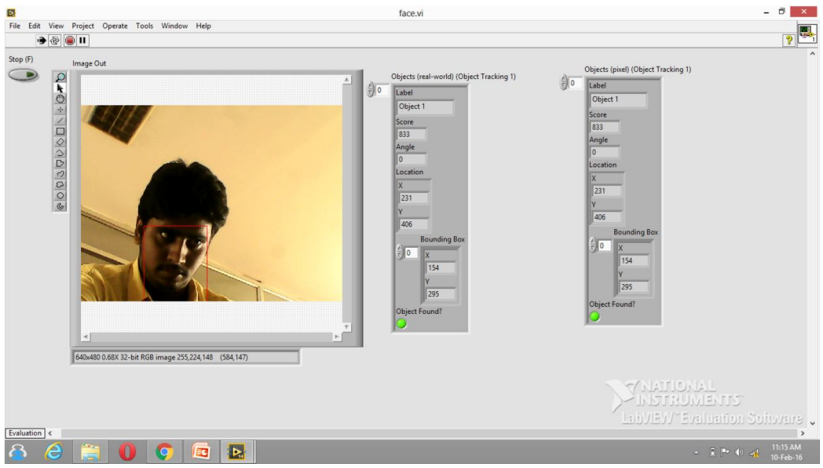

Figure 7 VI Front panel –Face monitoring with Labview vision and motion.

II. CONCLUSIONS

It expecting a very successful outcome of this paper in the form of NI-myRIO based assistive system for driver assistive jobs.

Then it will interest in bringing out this as a commercial product for manufacturers and the consumers who prefer additional safety equipment which aids in highway driving basically.

In future IR sensor for using real time car that will measure the obstacles distance immediately and reduce less number of accidents.

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