Automatic Driving Test System using Android Application

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Abstract

This paper is based on automatic driving test system in RTO office. This system is legal because it gives license to only eligible candidate. For driving vehicle driving license is necessary, because road safety is an issue of national concern and economy, public health and general welfare of every person. Main reasons for accidents are lack of knowledge about driving and illegal driving license given to the candidate to overcome this problem automatic driving system is conducted. This paper is dealing with android app and is used trace the track of candidate who is giving driving test.

Keywords: RTO, android app, blue tooth module, IR sensor, PIC controller, IFC

I. INTRODUCTION

Nowadays the candidates who have applied for driving license test have to appear for practical as well as theoretical exam. The theoretical exam evaluates the candidate's knowledge on different traffic rules and signs, traffic regulations, basic understanding of safety. The practical examination involves two tests that are off road and on road. Off road test is to check ability of candidate's in controlling the vehicle. On road test is conducted in light traffic on normal road [2]. The study conducted by International Finance Cooperation IFC) indicates that the process of obtaining driving license in India is distorted one.

As per the survey it is concluded that 60% of driving license holders did not even have to take driving license test and 54% among them were untrained to drive. The study conducted by IFC also shows that the driving license is in that category of public service involves corruption of direct demand. The study also indicates that the corruption is focused on agent that woks as intermediaries between the officials and citizens. [4].

Driving license system is very difficult task for government to monitor. Normally candidate have to appear along with their own vehicle for test drive in front of RTO. In this process RTO is necessary to monitoring the candidates. If candidate is passed in this test then he can be eligible to get license.

If the candidate is fail then the disqualified candidate provide some amount as corruption to RTO[1]. In our project the candidate who are coming for the test are gone through certain steps. Before entering for the driving license test candidate has to register. During driving the person is monitored by the android app system.

In this project the test road and are designed for the efficient driving on the real road rough path round-shaped road, blind corner and till driving simulation are to after customize condition for the driver. Many times at the sharp turn drivers leaves the track that courses the accident. With the help of the project automated test machine we will be able to generate the real time result. In this test, we also provide the result for the test depending on how many points were missed by the driver and also how many times the driver drove reverse. By the use of this system we can measure the result of driver in multiple parameter like reverse time, lane cutting, speed, side track etc. The corruption in this system is very much; to tackle the corruption we came up with this idea. As the level of transparency increases, the prevalence rate of corruption decreases in issuing of driving license in RTOs. It does not require interaction between the officials and citizens, negating the chances of corruption.

II. PROCEDURE FOR PAPER SUBMISSION

A. Review Stage

In [1] this system is the system is developed for the candidates whether they are eligible for the license or not with the help of load cells. When we apply any pressure or make any changes on the surface of load cell it suddenly changes its output. With the

differential output from the load cell we can detect the candidates who are not able to put their foot in the vehicle. Here we used ultrasonic sensors for hand signal detection and number of count detection. It was proposed by the microcontroller and then the output can be obtained.

This [2] system explains testing of candidates ability for driving license in more efficient and transparent way. This technical solution is develop by using 8051 microcontroller based embedded system and VB based virtual instrument. The controller module senses the motion of the vehicle on the track. This process eliminates human interventions and improves driving test accuracy. Manuscript received Feb, 2018.

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This [3] system is proposed to prevent illegal licenses and causes of accidents. This system can be implemented using Bayesians logic classification algorithm and feature extraction algorithm. This system is need to design wireless sensor networks and multisensory fusion based detection.

In [4] this system the LabVIEW is used to provide virtual instruments to graphical user interface for remote and monitoring the sensors embedded on the test track.

This [5] paper presents new moving object detection and tracking system that improves our earlier system used for 2007 DARPA urban challenge. This system utilizes visual recognition information to improve tracking model selection, data association and moment classification of our system. The test using data log of actual driving demonstrate the improvement and performance gain of new tracking system.

Drowsiness [6] and driving is a very difficult to identify. After alcohol drowsiness is the second cause of the road accidents. Peoples are conscious about the risk of drink and drive but don't realize its disadvantage. If the driver failing to concentrate on driving it reduces the driver reaction time and improper steering behavior.

Fingerprint [7] authentication or recognition refers to the automated method of verifying a match between two human finger prints. In this project the finger print authentication scheme is nonimatible biometric authentication scheme. This system is consist of smart card capable of storing the finger print of particular person while issuing the license the specific person's finger print is to be store in the card. At the time that person details are fully store in that database so at anywhere the person should place on his finger on the finger print reader. That person's entire information will be display.

In [8] this paper we developed an automatic and mechanized license and number plate recognition (LNPR) system which can detect the license plate number of the vehicle passing through given track using image processing. There is no need of additional devices such as GPS or radio frequency identification (RFID). With the help of cameras the system takes pictures from each passing vehicle and forwards the image to the computer.

Results of this system reveals that the system is successfully detects and recognizes the vehicle number plate on real images. This system can also be used for security and traffic control. As explained above this project is the combination of hardware system and android application. In this android app work as master and hardware work as slave. Hardware includes Bluetooth module, PIC, IR sensor. Hardware and android communicate through Bluetooth. Android application GUI image of driving track and points where IR sensor are placed. It includes start and stop buttons. And the result of driving test is also displayed with this app. In this android studio software is used to build the android app. Internal timer is used to read the data coming from the hardware.

When start button is pressed the internal timer get started and android app is connected with Bluetooth and sends command to read each IR sensor. When any IR sensor is cut by the vehicle on the track it is represented on the GUI. Point to point marking is done as the IR sensor gets cut by the vehicle. In this way the driving track is traced and the position of the vehicle is also located on the track. When the stop button is pressed the timer get stopped and the application will calculate the number of IR sensor that are missed by the driver and give the final result. The android platform is used for the support for Bluetooth network stack, which allows a device to wirelessly exchange data with other Bluetooth devices. The application provides access to the Bluetooth functionality through the android Bluetooth APIs.

These APIs connect application wirelessly to other Bluetooth devices, enables point to point and multipoint wireless Bluetooth permission request. Using Bluetooth APIs an android application performs scan for other Bluetooth devices, query the local Bluetooth adapter for paired Bluetooth devices, establish RFCOMM channels, connect to other devices through service discovery, transfer data to and from other devices, and manage multiple connections. The main advantage of android is it scales to every device, it is supported by hardware manufacturers. This paper is idea to solve the problem in driving test system. It include problems such as detecting proper way of driving and solution to give proper result of test, also avoiding corruption through agents. In this we used IR sensor on the track to detect moving vehicle on the track. The IR sensors are placed on the both sides of the vehicle to check the vehicle is moving in specified path.

An IR sensor is to check the vehicle is started to move or not, as the vehicle moves from initial position the test begins. These IR sensors interfaced with PIC16F458. IR sensor gives signal to PIC16F458 whenever a vehicle moves over it.PIC is interfaced to android application point is indicated on the application. This is how whole track is traced. Finally android app decides how to drive the vehicle and detects how many mistakes the driver has done. The android app gives the final result. After extensive research and studies a driving track is design by government to be used for the evaluation of the driving capabilities of the candidate.

The test parameter used in this system have also been derived by RTO, on studying the statistical analysis of driving pattern of candidate These test parameter covers all the relevant of candidates capabilities. The parameters evaluated are speed, side track, reverse.

The android app test module provide a graphical interface of following function: Login to application database, register candidate and provide appropriate navigation to start driving test, display the vehicle moment on the driving track in real time, allow configuration of each driving track, allow configuration of vehicle moment parameters that are used for the test evaluation, automatic test report is generated at the end of the test, saves the test result details in database with date and time data.

III. CONCLUSION

The idea of this system is only for testing the skill of driver but by adding some modifications we can use it to the driving school also. The android based RTO system help to reduce corruption and also this automation is for skill assessment automated driving test process eliminating human intervention leaving no scope for manipulation and negotiation. Hence we can say that this system increases level of transparency in the driving skill test process and also decrease the corruption in process of issuing the driving license.

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