❒   148

Design and Development of ARM based Electronic Test Evaluation System for RTO

Shweta Salokhe, U. L. Bombale
Department of Technology, Shivaji University, Kolhapur, India

Article Info	ABSTRACT
	Electronic test evaluation system for driving license is very useful now a days, as there is increase in the human intervention in the system. This system make the driving license procedure transparent to human being. The proposed technological solution is advancement towards the automation of system and improves the driving test accuracy. As a contribution to society this system reduces the number of road accidents occurs due to untrained drivers.

Corresponding Author:

Shweta Salokhe,
Department of Technology, Shivaji University, Kolhapur, India.
Email: shwetasalokhe455@gmail.com

1. INTRODUCTION

In the present system the candidates who have applied for driving license have to go through theory and practical exam. The theory examtest the candidate knowledge on different traffic signs, traffic regulation. Different ways are use to conduct of theory exam like, orals, question paper or computer based exam. The pass candidate in theory exam allowed for practical exam.

The survey conducted by International Finance Corporation shows that most of the accidents on road are cause due to improper knowledge of how to drive the vehicle. The system which were used now a days having certain limitations. This systems is manually operated system. As there are interference of human being, it will make the system corrupted. The middle agent take large amount of fees for licence and because of this those candidate who will not perform the test also got the licence. This situation causes the untrained licence holders.

As it will generate the untrained holders which results in the driving test quality degradation. To avoid all these problems which will degrade the system performance an electronic system used. This electronic system eliminate the middle agents who gives the licence to untrained persons. For eliminating all these an Electronic RTO Test Evaluation System should be develop. This proposed system give the licence to only trained persons. The overall ability of candidate required to drive the vehicle will be tested. The results produced are transparent and cost effective.
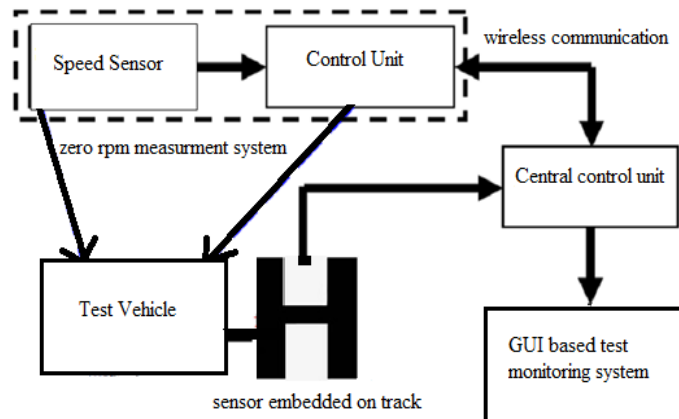
2. PROPOSED SYSTEM

Figure 1. Proposed system block diagram

This system consist of a Arm LPC2148 procrssor which use as a control unit. This unit control the communication between the software interface and the sensor data. When any one of the sensor pairs makes a high to low transition, it enable the on vehicle speed measurment unit. This unit is enable only when the vehicle inside the track and when vehicle is outside the track it is disabled.If any sensor pair make high to low transition, indicate that candidate is fail. If both the condition satisfy by the candidate then result is pass.

3. HARDWARE

The proposed system consist of ARM processor, zigbee based wireless communication and IR sensor pairs.

Arm Processor

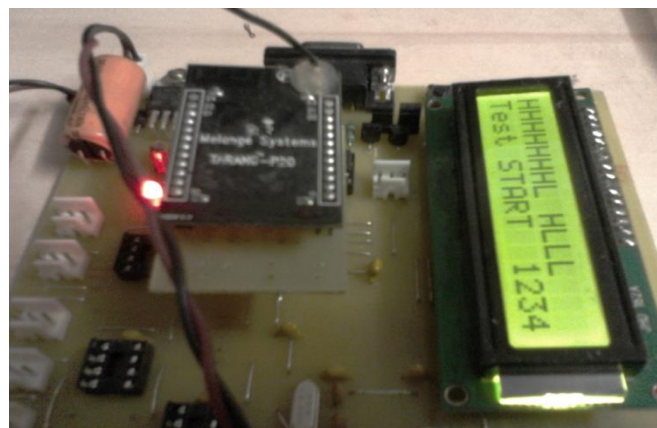The LPC2148 is used as controlling unit for the system.It used to communicate the sensor data with GUI based system.

Figure 2. ARM processer PCB

IR Sensor

IR Transmitter:

IR transmitterconsist of IC 555 in a astable multivibrator mode. It generate the 38KHz frequency and preset is used for adjusting the frequency.
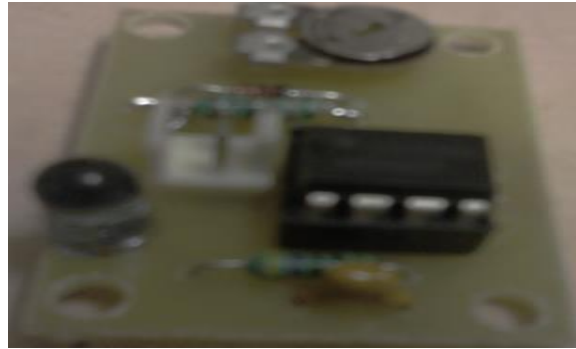
Figure 3. IR Transmitter

IR Receiver:

IR receiver consist of TSOP 1738 which receive the signal generated by the transmitter. It will receive only 38KHz signal generated from transmitter.

Figure 4. IR Receiver

The drive on the track is said to be complete only when the test candidate takes all the correct paths. The IR sensor on track are used as pairs where each pair consists of a transmitter and a receiver. The 12 sensor pair used are used, some of these pairs used for detecting the crossing of line and some used for speed measurement. These sensors are interfaced to GUI based Test Monitoring system. The function of the other sensor is to enable or disable of zero rpm measurement system.

 Zigbee

At present, wireless communication technology has been used widely. It satisfy the need of low power dissipation and low speed among wireless communication devices. It uses the wireless mesh network. It support more than 64,000 devices on a single network. Zigbee connects the long range device in a single network.

RPM Measurment

RPM measurement is the speed measurement system. It is the sensor used to measure the speed of the vehicle which is inside the test track.If the vehicle is not on the track speed sensor can not measure the speed of the vehicle.

4.   SOFTWARE

The visual basic 6 software is used for creating the GUI for application form. This GUI require basic information about the candidate like name, address, contact number, date of birth.

Figure 5. GUI for application form

Figure 6. GUI for displaying start test message

Figure 7. GUI for displaying test passed message

Figure 8. GUI for displaying test failed message

5.   CONCLUSION

The methods used now a day for driving license test are manual. The proposed system gives solution to this problem. As the system developed is automated it avoids the manual interference. This system causes trained users into the system. As untrained users cause the accidents this system overcomes this entire drawback. It also raises the level of transparency.

REFERENCES

[1]   Marianne Bertrand, Simeon Djankov, Remma Hanna and Sendhil Mullainathan, "Obtaining a Driver's License in India: An Experimental Approach to Studying Corruption", *The Quarterly Journal of Economics (2007) 122 (4): 1639-1676*.
[2]   "Driver errors cause most road deaths in India". The Times of India on the web.2010 – 07-04.
[3]   Government of India. Ministry of Road Transport and Highways. Road accidents in India: 2009, 2011-08-23.
[4]   Mondal, P, Abhishek Kumar, U.D. Bhangale, and Dinesh Tyagi. "A Silent Tsunami on Indian Road: A Comprehensive Analysis of Epidemiological Aspects of Road Traffic Accidents".*British Journal of Medicine & Medical Research: 1(1): 1 4-23, 2011. 2011-09-26*.
[5]   Shizhuang Lin; Jingyu Liu; Yanjun Fang; Wuhan Univ., Wuhan, "ZigBee Based Wireless Sensor Networks and Its Applications in Industrial", *IEEE International Conference on Automation and Logistics*, 200718-21Aug.2007 page(s): 1979- 1983 Location: Jinan.
[6]   ZigBee Specification v1.0, ZigBee Alliance, December 14th, 2004.
[7]   Xiuping Zhang; Guangjie Han; Changping Zhu; Yan Dou; Jianfeng Tao; *"Research of Wireless Sensor Networks based on ZigBee for Miner Position"*, International Symposium on Computer, Communication Controland Automation, IEEE. 29 July 2010 Pg 1 – 5.
[8]   Dunfan Ye, Daoli Gong, Wei Wang, *"Application of Wireless Sensor Networks in Environmental Monitoring",* 2nd International Conference on Power Electronics an Intelligent Transportation System IEEE 2009 pg 2563-2567
[9]   Chen, B., Wu, M., Yao, S., & Binbin, N. (2006). *ZigBee technology and its application on wireless meter reading system*. 2006 IEEE International Conference on Industrial Informatics, August 2006, 1257-1260.
[10] Michal VARCHOLA, Milos DRUTAROVSK, "ZigBee based Home Automation Wireless Network", *Acta Electrotechnica Informatica*, No. 4 Vol. 7, 2007. ISSN 1335-8243.