IoT-based Vehicle Tracking and Monitoring using Arduino Uno

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Abstract

A propelled vehicle checking and following framework considering Embedded Board and android application is outlined and actualized for observing the school vehicle from any area A to area B at constant. The proposed framework would make great utilization of innovation that consideringArduino Unoand smartphone android application. The proposed framework utilizes the internet of things (IoT) and GPS, where IoT sends an information to any guardian or owner regarding the vehicle status and GPS sends the current area of the vehicle.

Keywords:GPS, Arduino Uno processor, IoT, Smoke sensor, LM35 and buzzer.

1.INTRODUCTION

We watch the driver's weakness driving and vehicle robbery action which causes social constant issue like mishaps and numerous more dangers conditions [1]. We every day see or read such sort of exercises which are bringing up the issue of our wellbeing and security in both open and private segments. So, there is need of ongoing checking and following the vehicle additionally putting away and upgrading its database of specific circumstances. In the urban regions, human help is to some degree troublesome in giving the database of followed vehicle. In the proposed framework, the framework gives a completely computerized following and checking of the vehicle which accommodating for school transport, their proprietors, kids' security furthermore it gives the precise landing time of the vehicle at specific area or stop. What's more, thus utilizing precision in time, kids can invest more energy in concentrate, resting, or unwinding instead of sit tight for a deferred transport. Investing less energy sitting tight for a transport enhances agreeable and viable time administration of the understudy too.

With a specific end goal to lessen labor and sparing of cash, here the framework gives simple following arrangement utilizing Embedded Linux Board [8] and [9]. The proposed framework get following data of the vehicle like vehicle number (Unique ID), area, speed store into the database of ARM7. The framework likewise furnishes understudies wellbeing component with the assistance of temperature sensor and gas spillage sensor. Subsequently on account of raising the temperature inside the vehicle because of some reason or spillage of the LPG gas inside the vehicle, the ready message gets send to the driver and additionally vehicle proprietor.

For following the vehicle utilizing GPS and keep up its database [2], [5] and [7], MySQL database framework was utilized LPC2148 miniaturized scale controller. In the database base observing and redesigning component, the GSM/GPRS module is utilized which transmit the upgraded vehicle database to the server and client get to the database utilizing website page in Smartphone [6] and [10]. That demonstrates the constant vehicle area in the Smartphone. Hence, clients will have the capacity to

constantly screen a moving vehicle on request utilizing the Smartphone and decide the assessed separation and time for the vehicle to touch base at a given goal.

2. PROPOSED FRAMEWORK

The proposed framework would put inside the vehicle whose position is to be resolved on the website page and observed at constant. In the proposed framework, there is examination between the present vehicle way and right now indicated way into the record arrangement of Arduino Uno processor. Here in the proposed framework the effectively determined way inside Arduino Uno framework taken from vehicle proprietor's android PDA utilizing android application. Implies the determination of way from area A to B happens from vehicle proprietor's android application which gives more wellbeing and secures heading out to the voyager. Subsequently the driver drives the vehicle just on the vehicle proprietor's predetermined way. If the driver drives the vehicle on the wrong way, then the ready message will be sent from the proposed framework to the vehicle's proprietor portable. On the off chance that the vehicle's speed goes past the predetermined estimation of the speed, then additionally the notice message will be sent from framework to the proprietor versatile. The proposed framework likewise dealt with the explorer's wellbeing by utilizing LPG Gas spillage sensor MQ6 and temperature sensor LM35.

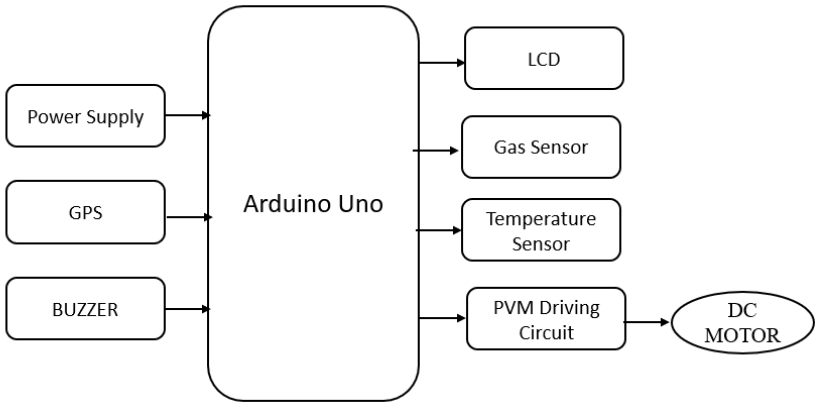


Fig.1 block diagram of the proposed system

3. HARDWARE DESCRIPTION

LCD

LCD is liquid crystal display technology works by blocking light. Specifically, it is made of two pieces of polarized glass that contain a liquid crystal material between them. A backlight creates light that passes through the first substrate. It is used for display purpose.

Figure 2. LCD display

Buzzer

A buzzer or beeper audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

Figure 3. Buzzer

Arduino

Arduino is an open-source electronic platform that is based on connection between hardware and software and it is easy to use and implement. They are designed in such a way that it read the input – water reaches a certain threshold and turn it into an output – sending the alert.

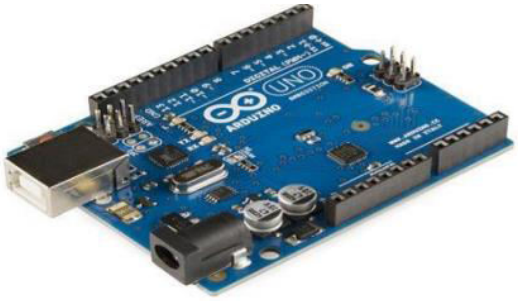


Figure 4. Arduino board.

Figure 5. GPS module.

Global Position System(GPS)

Global located node, at first, is a aerial radio course structure asserted by the US Flying corps. It is an overall catalogue fly system provides earth territory information Global positioning system or near view at any rate fly machine. Global positioning system doesn't customer send a data, and it works openly of, anyway advances redesign handiness arranging information, essential arranging capacities, normal, and business customers around the world. US take care of it, and make it straightforwardly accessible anyone.

Worldwide Situating Framework an overall course system zone information each and atmosphere. Self-rousingly, anyway progressions update supportiveness arranging information. Information beneficiary in order to evaluate customer's correct place.

EXPERIMENTAL ANALYSIS

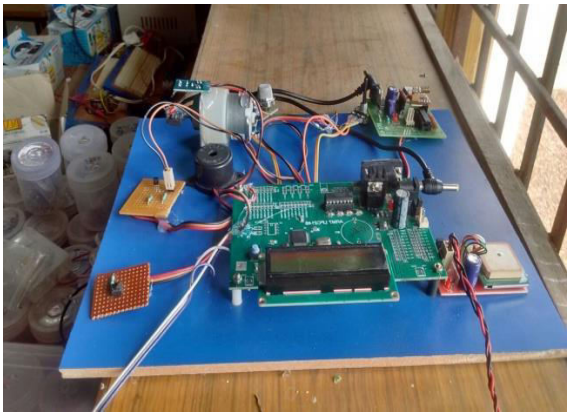


Fig. 6 Hardware set up of proposed system

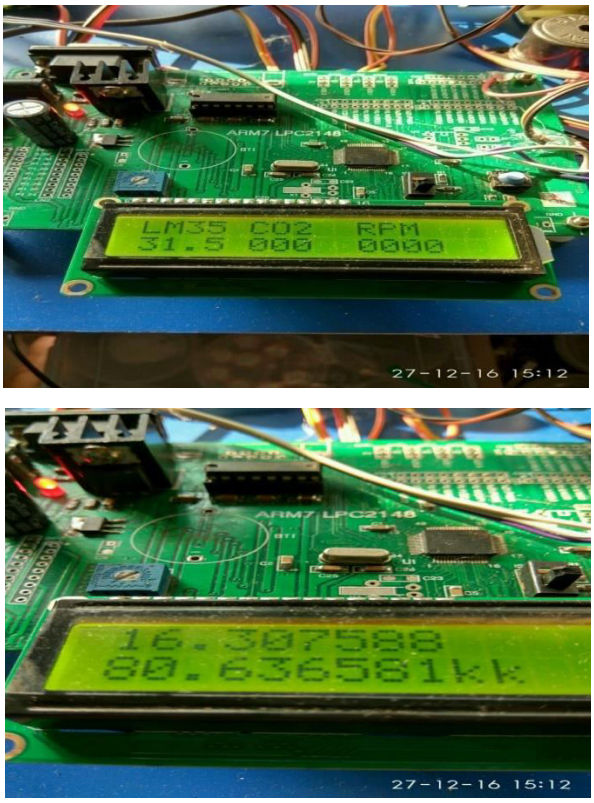


Fig. 7 Parameters display on LCD screen

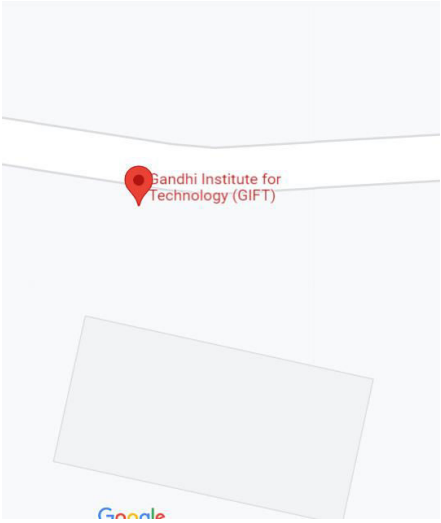


Fig. 8 Vehicle tracking location on Google maps

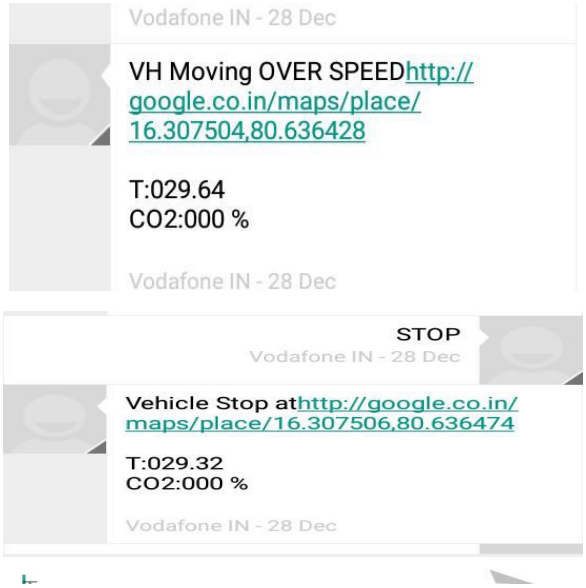
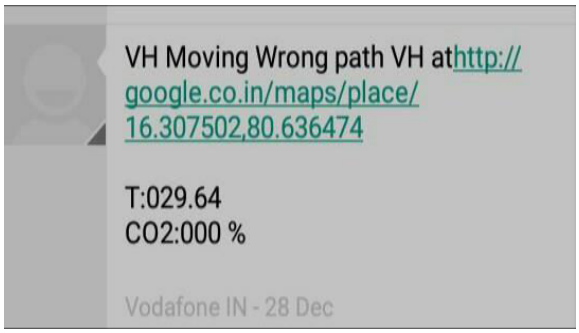


Fig.9 Vehicle speed monitoring by getting SMS to registered mobile number



5. CONCLUSION

The proposed framework subsequently made great utilization of Smartphone innovation by giving wellbeing and secure making a trip to the explorer utilizing incorrectly way ready component. The proposed framework assumes an imperative part progressively following and observing of vehicle by upgrading vehicle constant data on the server side after certain interim of time with a specific end goal to checked vehicle consistently. At whatever point driver drives vehicle on the wrong way or if there should be an occurrence of vehicle's mischance circumstance happens, the proposed framework gives the vehicle's ebb and flow area, speed to the vehicle proprietor's versatile. Thusthese advantages to track the vehicle as ahead of schedule as could be expected under the circumstances. Understudy's wellbeing system likewise gets gave utilizing temperature and LPG gas spillage sensors. In these specific circumstances, according to understudy's wellbeing concern, the proposed framework additionally gives ready back rub on understudy guardians portable so that guardians likewise think about their youngsters' security.

REFERENCES

[1] G. D. Sperling, D. Gordon, "Two Billion Cars: Driving Towards Sustainability" in , New York, NY:Oxford University Press, 2009.
[2] Iman M. Almomani, Nour Y. Alkhalil, Enas M. Ahmad, Rania M. Jodeh, "Ubiquitous GPS Vehicle Tracking and Management System", IEEE Jordan Conference on Applied Electrical Engineering and Computing Technlogy (AEECT), 2011.
[3] "Rocky Mountain Tracking", 2013, [online] Available: http://www.rmtracking.com/
[4] "LoJack",2013,[online] Available: http://www.lojack.com/
[5] D. K. Elliott, H. Christopher, "Understanding GPS Principles and Application" in , Norwood, MA:Artech House, 2006.
[6] G. Gu, G. Peng, "The survey of GSM wireless communication system", Proc. International Conference on Computer and Information Application (ICCIA), pp. 121-124, Dec. 2010.
[7] "SiRFstarIII GR-301", GPS Receiver Manual, [online] Available: http://www.navisys.com.tw/products/gps_gnss_receivers.htm.
[8] "Philips lpc2148", Microcontroller User Manual, 2012, [online] Available: http://www.nxp.com/documents/user_manual/UM10139.pdf.
[9] "Nmea string", Reference Guide, 2011, [online] Available: http://home.mira.net/~gnb/gps/nmea.html.
[10] M.Ridhwan, A. Fuad and M.Drieberg, "Remote Vehicle Tracking System using GSM Modem and Google Map", IEEE Conference on Sustainable Utilization and Development in Engineering and Technology, May 2013.