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IOT BASED SMART ROADS INTELLIGENT HIGHWAYS WITH WARNING MESSAGE AND DIVERSIONS ACCORDING TO CLIMATE CONDITIONS

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ABSTRACT:

The aim of our work is to find the vehicle accident location by means of sending a message using a system which is placed inside of vehicle system An intelligent Highway is an innovative concept for smart roads of future smart cities. It is a program of innovation that links a different way of looking at things with innovative ideas that apply the opportunities offered by new technologies in smart ways. Nowadays safety on road has become an important factor in our life because there is an increasing amount of accidents on the road and there are some places where accident occur frequently such as crossings, turns. Also there is a big problem of traffic jams on the road. So we are designing a system that is "An Intelligent Highway system with (Weather Accidents Landslides and traffic) W.A.L.T." which is an innovative concept to maintain safety on roads. In this project, we present a low cost innovative technology for smart roads. We are implementing "Smart traffic" by using IR sensors, light sensors and IOT devices.

KEYWORDS: Accidents,Smart highways, IOT devices, Wi-Fi module, IR sensors, Light sensors.

INTRODUCTION:

The Internet Of Things(IOT) is the network of physical objects-devices, vehicles, buildings and other items-embedded with electronics, software, sensors and network connectivity that enables these objects to collect and exchange data. The IOT allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit. When IOT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, smart homes and smart cities. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate between the existing internet infrastructures. This paper proposes a system for smart highways of future cities. Common city roads have to face many problems such as traffic jams which cause loss of valuable time. And also there is no display indication on our roads showing traffic conditions in the city. This paper proposed a wireless sensor based system which will be situated in

the city roads and read the traffic data and send it to the displays or road signs which are digital led boards providing information about all data. The second part of system consist accident detection system based on the MQ6sensor it used for to detect the pollution. In this using IR sensor based on to detect the Accidents on the Road.

EXISTING SYSTEM:

Traffic-signal control systems coordinate individual traffic signals to achieve network-wide traffic operations objectives. These systems consist of intersection traffic signals, a communications network to tie them together, and a central computer or network of computers to manage the system. Coordination can be implemented through a number of techniques including time-base and hardwired interconnection methods. Coordination of traffic signals across agencies requires the development of data sharing and traffic signal control agreements. Therefore, a critical institutional component of Traffic Signal Control is the establishment of formal or informal arrangements to share traffic control information as well as actual control of traffic signal operation across jurisdictions. Signal coordination systems are installed to provide access. A traffic-signal system has no other purpose than to deliver favorable signal timings to motorists. The system provides features that improve the traffic engineer's ability to achieve this goal. These are primarily access features. They provide access to the intersection signal controller for maintenance and operations. The more complete and convenient the access, the more efficient the operator will be and the more effective the system. In addition to control of traffic signals, modern systems also provide wide-ranging surveillance capabilities, including various kinds of traffic detection and video surveillance. They also provide more powerful traffic-control algorithms,including the potential for adaptive control and predictive surveillance.

PROPOSED SYSTEM:

The main purpose is to provide a system in very reasonable cost. So in this work we are using the basic microcontroller LPC2148 for cost effective and also for easy understanding. The purpose of the project is to prevent loss of energy by the unnecessary usage of street lights at midnight. At nights street lights are switched ON even if there are no travelling vehicles. For this we are using IR sensors. The microcontroller operates according to the signal sent by IR sensors, i.e it switches ON if vehicle presents , otherwise switch OFF the light. The vibration sensor is connected to microcontroller for checking the occurrence of accident.

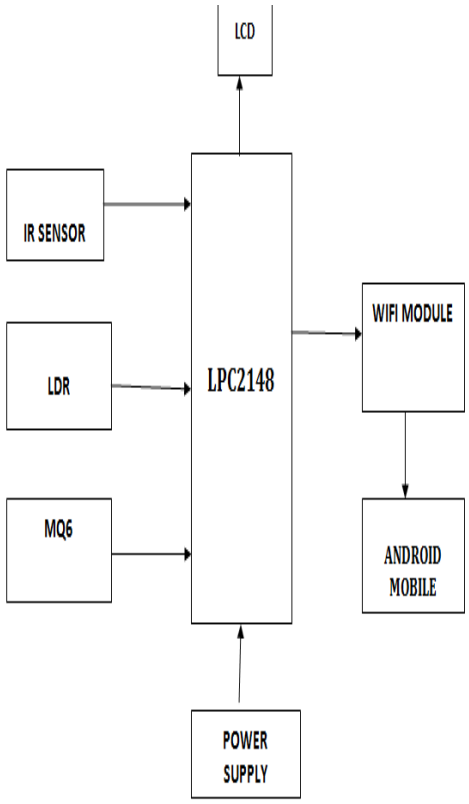

Fig 1: Block Diagram for Smart Roads using LPC2148 Microcontroller

LCD: A liquid-crystal display is a flat panel display or other electronically Modulated optical device that uses the light-modulating properties of liquid crystals. liquid crystals do not emit light directly,instead using a backlight or reflector to produce images and color or monochrome.

MQ-6 Module: Are used in gas leakage detecting equipment in family and industry, are suitable for detecting of LPG, iso-butane ,propane, LNG, avoid the noise of alcohol and cooking fumes and cigarette smoke the module give out the concentration of the gases as a analog voltage equipment to the concentration of the gases.

LDR: An LDR is a component that has a resistance the changes with the light intensity falls upon it .this allows them to be used in light sensing circuits.

LPC2148:LPC2148 is an ARM7TDMI-S based high performance 32bit RISC microcontroller with thumb extensions 512KB on chip flash ROM with in system programming in application programming,32KB RAM, vectored interrupt controller, two 10bit ADCs with 14channels,USB2.0 fullspeed device controller, two UARTS ,one with full modem interface.

IR sensor: An IR sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion.

WIFI : WIFI is a Technology for wireless local area networking devices based on the IEEE 802.11 standards.wifi is a trade mark of the wifi alliance,which restricts the use of the term Wi-Fi certified to products that successfully complete interoperability certification testing.

FLOWCHART:

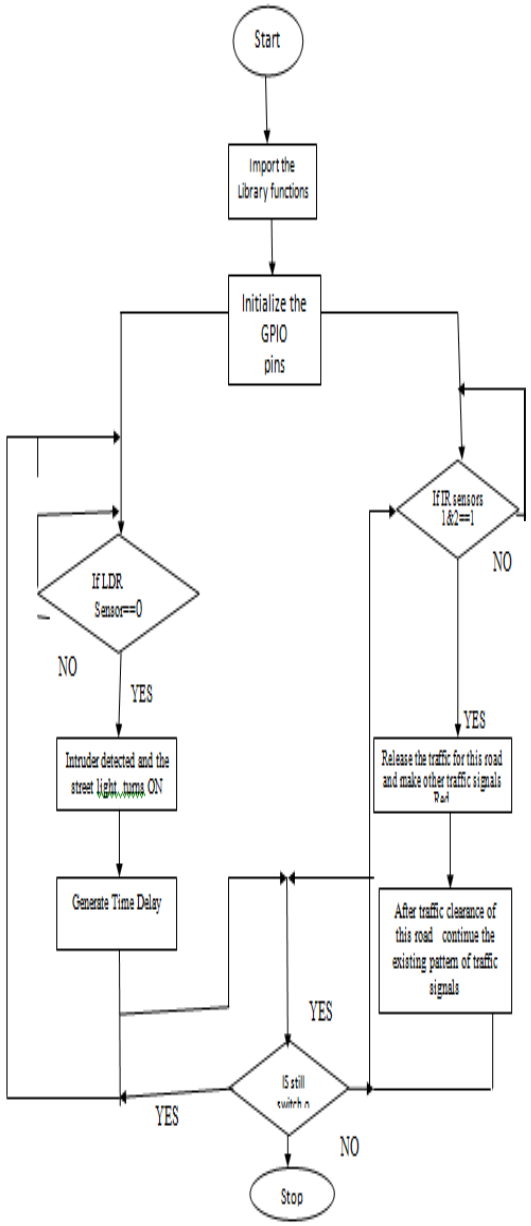

FIG: Flow charts for smart Roads

In this system, sensors are used to prevent loss of energy by the unnecessary usage of street lights at midnight .At nights street lights are switched ON even if there are no travelling vehicles. So, in order to overcome this, sensors are used for street lights and when a vehicle pass through the sensors, the street light is switched 'ON' and when the vehicle passes the particular street light, the next street light will be switched 'ON' automatically and the previous lights are switched 'OFF'. This is continued throughout the street thereby saving the energy. IR sensors is for detect the Accidents. And microcontroller LPC2148

HARDWARE REQUIREMENTS:

1. Microcontroller
2. LCD
3. LDR
4. IR Sensor
5. Voice Play Back Module
6. Power Supply
7. MQ6
8. Speaker
9. Bluetooth

SOFTWARE REQUIREMENTS:

1. Keil IDE
2. Embedded 'C'
3. Prog isp

CONCLUSION:

Road traffic congestion is a central problem in most developing countries. Most urban areas have poorly managed traffic networks with several traffic hot-spots or potential congestion areas. In this paper, we study the problem of road traffic congestion in high congestion hot-spots in developing regions. IR sensors are used to detect the signal toLPC2148controller about the traffic congestion. Our hope is the localized de-congestion mechanisms are potentially easier to deploy in real-world settings and can enhance the traffic flow at critical hot-spots in road traffic networks. We believe that this represents only a first step in the development of low-cost, deployable strategies for alleviating congestion in developing regions. The future work lies towards generating electricity by developing smart speed breakers in roads. We can also implement charging system for electric vehicles in traffic signals by deploying induction coil. The paper discussed a means to detect and curb congestion in a localized setting. Although, the solution is feasible to affect local congestion, it is still not able to curb the congestion extending for miles due to the localized focus of the approach.

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