IOT BASED INTILLEGENT HOME FOR SMART DEVICES

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Abstract: The quickly propelling versatile communication technology and the decline in costs make it Possible to fuse portable technology into home automation systems. In long time past days we were not checking the Office and Home apparatuses by sitting at one place. We had controlled those appliances manually; it takes more time to for controlling. This is disadvantage here like time consuming.We can overcome the disadvantage of the existing method by Remote control via the Internet and it's a new feature and used in home automation systems. However, providing a mechanism for interaction between devices in this environment is quite challenging. The i nternet has been for the most part used to associate personal computers up until this point, however in a matter of seconds a wide range of apparatuses with embedded computers will trade data over the Internet. An enormous no of microcontrollers are accessible in the present devices which can be connected to the Internet. In the event that these wise apparatuses could be associated with the Internet effortlessly, the w requires a system interface, for example, Ethernet, a TCP/IP convention stack, embedded web server software and static and dynamic site pages that shape the UI for that particular device. The system utilizes a reduced circuitry worked around RASPBERRY PI microcontroller programs are produced in LINUX.

INTRODUCTION

The IMPORTANCE of home monitoring is undoubted in our age. This is the field where wireless sensor networks (WSNs) have been first used, their primary purpose consisting in the observation of the physical world and the recording of physical quantities characterizing it [1]. WSNs are large networks of resource-constrained sensors with processing and wireless communication capabilities, which implement different application objectives within a specific sensing field. They can also be used for ambient monitoring, a topic of great interest nowadays as well, indoor air quality representing an important factor affecting the comfort, health, and safety of building occupants [2]. [3] discussed about Intelligent Sensor Network for Vehicle Maintenance System. Modern automobiles are no longer mere mechanical devices; they are pervasively monitored through various sensor networks & using integrated circuits and microprocessor based design and control techniques while this transformation has driven major advancements in efficiency and safety. In the existing system the stress was given on the safety of the vehicle, modification in the physical structure of the vehicle but the proposed system introduces essential concept in the field of automobile industry. It is an interfacing of the advanced technologies like

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Embedded Systems and the Automobile world. This "Intelligent Sensor Network for Vehicle Maintenance System" is best suitable for vehicle security as well as for vehicle's maintenance. Further it also supports advanced feature of GSM module interfacing. Through this concept in case of any emergency or accident the system will automatically sense and records the different parameters like LPG gas level, Engine Temperature, present speed and etc. so that at the time of investigation this parameters may play important role to find out the possible reasons of the accident. Further, in case of accident & in case of stealing of vehicle GSM module will send SMS to the Police, insurance company as well as to the family members. Finally, the use of wireless ambient sensors can lead to more energy-efficient buildings [4]. The constant attempts of social and economic bodies for the development of technologies for improving energy efficiency and reducing pollution and for the more efficient use of national infrastructure along with the needs of decreasing the cost of computation, networking, and sensing had lead to the emergence of a new generation of digital systems, called cyber-physical systems (CPSs), less than a decade ago. These include embedded systems, sensor networks, actuators, coordination and management processes, and services to cap- ture physical data and to act on the physical environment, all integrated under an intelligent decision system [5], [6]. In this context, wireless sensors can be used to collect physical information that is further exploited by CPSs [7]. This will lead to CPSs composed of interconnected clusters of process- ing elements and large-scale wired and wireless networks of sensors and actuators gathering data about and acting upon the environment [8]. These newly appeared systems have a lot of similarities with the Internet of Things (IoT), an enabler of ubiquitous sensing, that envisions a world in which many billions of Internet-connected objects or things, with sensing, communication, computing, and potentially actuating capabilities, will coexist, allowing an uninterrupted connection between people and things [9].

This paper presents a system for environmental and ambient parameter monitoring using low-power wireless sensors con- nected to the Internet, which send their measurements to a central server using the IEEE 802.11 b/g standards. Finally, data from all over the world, stored on the base station, can be remotely visualized from every device connected to the Internet. This overcomes the problem of system integra- tion and interoperability, providing a well-defined architecture that simplifies the transmission of data from sensors with different measurement capabilities and increases supervisory efficiency [10]. Until recently, Wi-Fi technology has not been considered for implementing wireless sensing solutions because of its inability to meet the challenges in these types of systems, with the major drawback consisting in the unsatis- factory energy consumption. However, this has changed, since new power-efficient Wi-Fi devices have been developed and new solutions can benefit from several advantages offered by this technology, namely, the reduction of infrastructure costs while improving total ownership costs, native IP-network compatibility, and the existence of familiar protocols and management tools [11]. Furthermore, high transmission rates, which are required in industrial applications, are achievable and the access to the network in this case is easy and no special wireless adapters are required [12].

LITERATURE SURVEY:

This system utilizes a solidification of a cell phone application, handheld remote, and PC based program to give a methods for UI to the purchaser [1].Shrewd controlling system in the paper. Likewise, the brilliant house system was supported by remote control system as a sub controlling system. The system additionally is associated with the web to screen and control the house hardware's from anyplace on the planet utilizing LabVIEW [2]. Deepali Javale, presents help to impaired/old matured individuals. It gives essential thought of how to control different home apparatuses and give a security utilizing Android telephone/tab. Client can communicate with the android telephone and send control flag to the Arduino ADK which thus will control other embedded d devices/sensors. Mohammad El - Basioni, proposed another outline for the savvy home utilizing the remote sensor arrange and the biometric technologies. The system utilizes the biometric in the validation for home passageway which improves home security and in addition ease of home entering process. The structure of the system is described and the incorporated communications are analyzed, also estimation for the whole system cost is given which is something .The paper ends with a n imagination for the future of the smart home when employs the biometric technology in a la rger and more comprehensive form. The paper closes with a creative ability for the fate of the brilliant home when utilizes the biometric technology in a bigger and that's just the beginning.
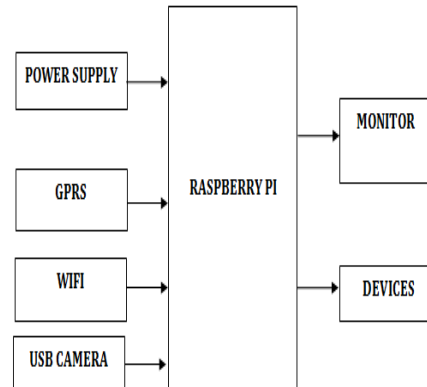
PROPOSED SYSTEM:

Fig:1:Block diagram

METHODOLOGY

Micro controller: This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

Raspberry Pi : The Raspberry Pi delivers 6 times the processing capacity of previous models. This second generation Raspberry Pi has an upgraded Broadcom BCM2836 processor, which is a powerful ARM Cortex-A7 based quad-core processor that runs at 900MHz. The board also features an increase in memory capacity to 1Gbyte.

Liquid-crystal display (**LCD**) is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can

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be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock.

GPRS:

GPRS (general packet radio service) is a packet-based data bearer service for wireless communication services that is delivered as a network overlay for GSM, CDMA and TDMA (ANSI-I36) networks. GPRS applies a packet radio principle to transfer user data packets in an efficient way between GSM mobile stations and external packet data networks. Packet switching is where data is split into packets that are transmitted separately and then reassembled at the receiving end. GPRS supports the world's leading packet-based Internet communication protocols, Internet protocol (IP) and X.25, a protocol that is used mainly in Europe. GPRS enables any existing IP or X.25 application to operate over a GSM cellular connection. Cellular networks with GPRS capabilities are wireless extensions of the Internet and X.25 networks.

Fig: 2:GPRS module

WIFI:

Wi-Fi is the name of a popular wireless networking technology that uses radio waves to provide wireless high-speed Internet and network connections. A common misconception is that the term Wi-Fi is short for "*wireless fidelity*," however this is not the case. Wi-Fi is simply a trademarked phrase that means *IEEE 802.11x*. Wi-Fi works with no physical wired connection between sender and receiver by using radio frequency (RF) technology, a frequency within the electromagnetic spectrum associated with radio wave propagation. When an RF current is supplied to an antenna, an electromagnetic field is created that then is able to propagate through space.The cornerstone of any wireless network is an access point (AP). The primary job of an access point is to broadcast a wireless signal that computers can detect and "tune" into. In order to connect to an access point and join a wireless network, computers and devices must be equipped with wireless network adapters Wi-Fi is supported by many applications and devices including video game consoles, home networks, PDAs, mobile phones, major operating systems, and other types of consumer electronics. Any products that are tested and approved as "Wi-Fi Certified" (a registered trademark) by the Wi-Fi Alliance are certified as interoperable with each other, even if they are from different manufacturers. For example, a user with a Wi-Fi Certified product can use any brand of access point with any other brand of client hardware that also is also "Wi-Fi Certified". Products that pass this certification are required to carry an identifying seal on their packaging that states "Wi-Fi Certified" and indicates the radio frequency band used (2.5GHz for 802.11b, 802.11g, or 802.11n, and 5GHz for 802.11a).

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Fig:3: WIFI Module

VSD03 is the new third-generation embedded UART-WIFI modules studied by VSD TECH. UART-WIFI is an embedded module based on the UART serial, according with the WIFI wireless WLAN standards, It accords with IEEE802.11 protocol stack and TCP / IP protocol stack and it enables the data conversion between the user serial and the wireless network module. Through the UART-WIFI module, the traditional serial devices can easily access to the wireless network. VSD03 does a comprehensive hardware and software upgrades based on the products. Its main features include:

I**nterface:**

- 2*4 pins of Interface: HDR254M-2X4
- The range of baud rate: 1200~115200bps
- RTS / CTS Hardware flow control
- single 3.3V power supply

W**ireless**

- support IEEE802.11b / g wireless standards
- support the range of frequency: 2.412~2.484 GHz
- support two types of wireless networks:
   o Ad hoc and Infrastructure
- support multiple security authentication mechanisms:
   o WEP64/WEP128/ TKIP/CCMP(AES)
   o WEP/WPA-PSK/WPA2-PSK
- support quick networking
- support wireless roam

WEBCAM

"Webcam" refers to the technology generally; the first part of the term ("web-") is often replaced with a word describing what can be viewed with the camera, such as a netcam or streetcam. Webcams are video capturing devices connected to computers or computer networks, often using USB or, if they connect to networks, Ethernet or Wi-Fi. They are well-known for low manufacturing costs and flexible applications. **Video capture** is the process of converting an analog video signal—such as that produced by a video camera or DVD player—to digital form. The resulting digital data are referred to as a digital video stream, or more often, simply video stream. This is in contrast with screen casting, in which previously digitized video is captured while displayed on a digital monitor

Webcams typically include a lens, an image sensor, and some support electronics. Various lenses are available, the most common being a plastic lens that can be screwed in and out to set the camera's focus. Fixed focus lenses, which have no provision for adjustment, are also available. Image sensors can be CMOS or CCD, the former being dominant for low-cost cameras, but CCD cameras do not necessarily outperform CMOS-based cameras in the low cost price range. Consumer webcams are usually VGA resolution with a frame rate of 30 frames per second. Higher resolutions, in mega pixels, are available and higher frame rates are starting to appear.

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Fig:4: Webcam

DC Motor:

A DC motor relies on the fact that like magnet poles repels and unlike magnetic poles attracts each other. A coil of wire with a current running through it generates an electromagnetic field aligned with the center of the coil. By switching the current on or off in a coil its magnetic field can be switched on or off or by switching the direction of the current in the coil the direction of the generated magnetic field can be switched 180°.

Fig: 5: DC Motor

Motor driver (L293D):

DC motors are typically controlled by using a transistor configuration called an "H-bridge". This consists of a minimum of four mechanical or solid-state switches, such as two NPN and two PNP transistors. One NPN and one PNP transistor are activated at a time. Both NPN and PNP transistors

can be activated to cause a short across the motor terminals, which can be useful for slowing down the motor from the back EMF it creates. H-bridge. Sometimes called a "full bridge" the H-bridge is so named because it has four switching elements at the "corners" of the H and the motor forms the cross bar. The switches are turned on in pairs, either high left and lower right, or lower left and high right, but never both switches on the same "side" of the bridge. If both switches on one side of a bridge are turned on it creates a short circuit between the battery plus and battery minus terminals. If the bridge is sufficiently powerful it will absorb that load and your batteries will simply drain quickly. Usually however the switches in question melt.

RESULT:

Fig:6: Hardware kit

CONCLUSION:

The task "IOT BASED INTELLIGENT HOME FOR SMART DEVICES" has been effectively planned and tried. Incorporating highlights of all the equipment parts utilized have created it. Nearness of each module has been contemplated out and put precisely hence adding to the best working of the unit. Furthermore, utilizing exceptionally propelled

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IC's and with the assistance of developing technology the undertaking has been effectively actualized.This last segment of the report traces a few highlights that could possibly be executed in future discharges. The current arrangement of highlights execute is a base to what a shopper would anticipate. The current system is utilized for getting to information at a medium speed. In any case, we can expand the getting to speed immediately with the assistance of cutting edge board.

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