
IOT BASED VEHICLE TRACKING AND RFID ACCESS SYSTEM

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ABSTARCT

This article details the process of creating an RFID-based access control and safety device for use in the university's dorms. In order to do the operation, the system utilises both RFID technology and biometrics. The hostel's RFID reader takes a picture of the guest and checks the system for a matching whenever it reads a valid ID number. If the card and photo match a registered user's information, entry is given; otherwise, the system triggers an alert and places a GSM modem call to the mobile security unit. Suspicious individuals may be apprehended in this fashion.

Keywords: RFID, GSM modem, Zigbee wireless module, Arduino Micro controller ,GPS.

I. INTORDUCTION

Many businesses in Pakistan are finding that an automatic identity and access servomotor is essential in order to combat the increasingly dangerous security concerns they face. Only authorized personnel will be able to enter the building once the system has been installed at the entrance. The system may be set up at a number of strategic locations across the business to monitor the person's every step and limit their access to restricted areas. Capturing potential security risks in this manner will undoubtedly boost safety inside the company. The access control system may be built using radio frequency identification (RFID), a wireless technology. This technique has been used in the literature to automate a wide variety of tasks, from the manufacturing industries to home care [1]. BO Yan [2] stated that an RFID-based automated ticketing system was installed at a tourist hot spot. RFID electronic tickets, Qr codes, desktop computers, capacity, personal computers, and site controllers are all parts of the system's hardware. Information such as the ticket type, date, location, serial number, and check bit are all encrypted using S-DES there in electronic ticket. Information contained inside an electronic ticket is scanned by an RFID reader at the venue and sent to a local computer station and its associated servers across a network. The terminal does the decryption and authentication of the data locally. Then, the site controller lets the correct kind of visitor in. The selling sub-system, the decision sub-system, and the administration sub-system all contribute to this process of system verification and authorization.

II. LITERATURE REVIEW

A brief survey on current RFID applications

Radio Frequency Identification (RFID) is the next generation wireless communication technology applicable to a wide range of application areas. There are an increasing number of retailers, banks, traffic managements, exhibitions and logistic providers practicing this new technology to their products and services. Therefore, it brings both opportunities and challenges to RFID researchers. In this paper, we provide a brief survey on RFID applications and suggest some opportunities in intelligent RFID applications.

Design of Sight Spot Ticket Management System Based on RFID

In the area of ticket management, RFID (radio frequency identification) technology has a lot of domestic market. Making use of advanced RFID technology, the paper proposes a comprehensive and functional solution for sight spots in areas of design of electronic tickets, RFID data integration, hardware architecture, software design, process control, data encryption. It takes ticket management, information sharing and automatic identification organically integrated as one, and enhance the level of information of sight spots.

Implementation of RFID Technology in Parking Lot Access Control System

Parking plays an important role in the traffic system since all vehicles require a storage location when they are not being used to transport passengers. Whether it is a parking lot or on-street parking there is a problem of parking revenue convenience. Implementation of the RFID technology could be a good solution for this problem.

Existing system: In previous projects don't have any vehicle tracking and theft detection system and there may be problem that we don't know that who theft the car and where did it took. Even sometimes we cannot get our car back. To avoid such incidents we propose a new projects so that we can carful with theft and even we can track the car where is going on.

Proposed system: This paper presents a system which is designed to trace the vehicle when it is lost using GPS and GSM technology. GPS receiver and GSM module uses Arduino UNO controller to forward the commands. This system is fixed inside a vehicle. GPS module will transfer the location values to the controller. Controller will receive it and sends that information to the automobile user using GSM modem. Now the owner can take appropriate action using GSM mobile App. To provide security to the system which is placed inside car RFID technology is used. To monitor the sensors data a channel is used which is Thingspeak. This uses a IoT technology to store and visualize the sensors data.

III. METHODOLOGY

Using a mechanism, GPS determines the lost car's current latitude and longitude and sends that data to the car's owner through the GSM module and a text message. With the GSM App, the driver may control the car from afar by communicating through texts to the Gps module across a network. In order to detect alcohol use and potential accidents, sensors are utilised. By issuing the TRACK command, the car's owner may find out the vehicle's whereabouts at any time. The client will be notified and the thingspeak channel will just be updated if an alcohol sensor or fault diagnosis sensor is triggered.

BLOCK DIAGRAM

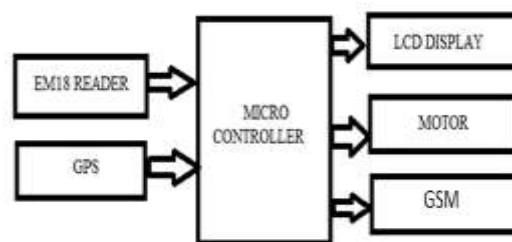


Fig 1:-Block schematic

HARDWARE REQUIREMENTS

EM18 READER: The EM18 is a reader for radio-frequency identification (RFID) tags operating at 125 kilohertz. After identifying tags, it uses UART communication or Frankel format on the appropriate pins to send a serial signal with the unique ID to a computer or microcontroller. The EM18 RFID reader can get information from RFID tags with an ID of up to 12 bytes in length.

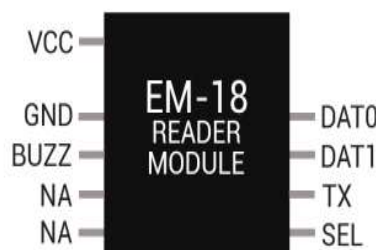


Fig 2 :-Em-18

The 125 kilohertz RFID tags used by the EM18 can be read by its built-in reader. After tags have been identified, a serial signal containing the ID is sent to a processor or microcontroller by UART connection or Another format upon that relevant pins. RFID tags with IDs up to 12 characters in length are supported by the EM18 RFID reader.

RFID CARDS: Radio-frequency identification is sometimes known as RFID. RFID cards are utilised in situations where authentication process is essential, when personnel monitoring is vital, or both.

**Fig 3:-RFID**

Radio-frequency identification (RFID) tags are a sort of tracking device that may be used for inventory management and logistics. RFID tags are essentially smart labeling that can keep track of anything from a serial number and a short summary to multiple pages of data.

Motor-To transform mechanical energy into electrical energy, one may utilise a device called an electric motor. Electric motors, from a technical standpoint, are devices that transform electric power into mechanical motion.

**Fig.4, Motor**

GPS-Location and time data may be obtained through the Global Positioning (GPS), a satellite-based navigation system. Anybody with a Receiver and also an unimpeded view of at least four GPS satellites may use the system at no cost. By accurately sequencing the impulses sent by GPS satellites, a GPS receiver is able to pinpoint its location. These days, a smartphone is incomplete without a GPS navigation system.

**Fig.5. GPS**

LIQUID CRYSTAL DISPLAY (LCD)-A liquid crystal display, or LCD. Because of these advantages, LCD is rapidly taking LEDs (7-segment LEDs and perhaps other multi segmentation LEDs) in many applications. The decrease in LCD costs capacity for showing text, numbers, and images. LEDs, on the other hand, can only display a few digits and a few letters. The LCD has a built-in refreshing controller, thus it no longer has to rely on the CPU to do this function. Nevertheless, the LED requires frequent CPU updates in order to maintain a steady show. Character and graphical programming that is simple. These parts are "specialised" for use with microcontrollers and will not function when powered by a regular IC circuit. They are used in the process of programming a small LCD with various messages. A model described here is for its low price and great possibilities most frequently used in practice. It is based on the HD44780 microcontroller (Hitachi) and can display messages in two lines with 16 characters each. It displays all the alphabets, Greek letters, punctuation marks, mathematical symbols etc. In addition, it is possible to display symbols that user makes up on its own. Automatic message on display (shift left and right), appearance of the pointer, backlight etc. are considered as useful characteristics.

**Fig.6. LIQUID CRYSTAL DISPLAY**

GSM: In order to characterise the methods for first (2G) digital cellular networks, the European Telecom Set Of logical (ETSI) created the Global System for Mobile Telecommunication (GSM). The GSM Association also has trademark rights to the term "GSM." [2] Full Rate voice codec is sometimes referred to as GSM.



Fig.7. GSM

Motor: All-terrain robots and other robotic uses are just some of the many possible places for this 12 Volt DC Motor - 100 RPM to be put to good use. These motors include a 2 inches screwed drill hole in the centre of the shaft, making it easy to attach the motor to the axles or any other hydraulic component.

These DC motors' basic design and use of shaft gearing provide for the best possible performance. As the shaft of these DC motors passes through the middle of the gearbox, the term "Center Shaft DC Geared Motor" was coined to describe them.



Fig.8.Motor

IV. RESULT

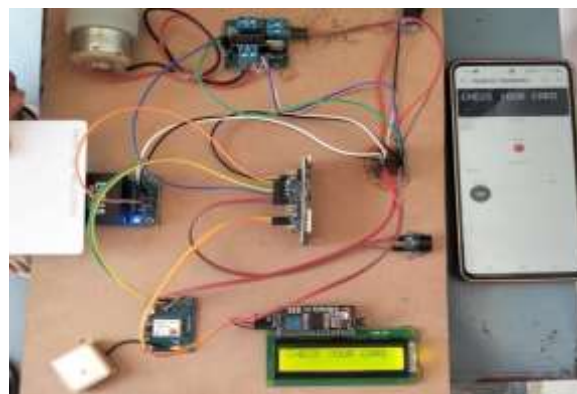


Fig 9:-RESULT FROM BLINKY APP

V. CONCLUSION

This article presents the design for an access and security management system that may be used in the student dormitories at Punjab University. Radio-frequency identification (RFID) combined with biometrics technology is used by the system to verify the identities of users. Processing data from sub-controllers allows the system to successfully implement security and access control. There are three different types of controllers: an entry surveillance controller, an exit surveillance controller, and a mess monitoring controller. These controllers scan the user's Tag and look up the corresponding number in permanent memory. If a match is found, the controllers will instruct the computer to take a picture of the user. The system sends a "access given" or "access refused" message to the controllers based on the results of a facial recognition module developed using a

neural network. In response, the controllers can allow the user access or initiate an emergency notification. A http server is used to consolidate this system. The web server collects data from the hostel computers and remembers each user. There is room for enhancement in the reaction time of the system, but overall it is helpful in lowering security concerns to the hostels. Instead of employing computers that are able to process the photos in real time, it is preferable to use specialised processors to increase the reaction time.

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