IOT BASED PRISON BREAK MONITORING AND ALERTING SYSTEM

ASHA J[1], BHUVANESHWARI R[2], MONIGA A[3], MONIKA A[4]

Department of Electronics and Communication Engineering

Bharathiyar Institute of Engineering for Women Deviyakurichi

maryasha852@gmail.com,bhuvaneshwari2262001@gmail.com,mmoni079142@gmail.com,monikabe458@gmail.com

SANMATHI CK[5] (ASST PROFOSSER)

Department of Electronics and Communication Engineering

Bharathiyar Institute of Engineering for Women Deviyakurichi

sanmathick@gmail.com

ABSTRACT

Well it is a quite shocking fact but prison escapes are not very uncommon occurrences. There is no exact data count but we have all heard and still keep hearing of a variety of prison escapes happening globally. The fact that such number of inmates may still be roaming among us is itself scary. Well so here we propose a prisoner tracking system that helps detect prison breaks and instantly alert authorities using IOT. The system makes use of a microcontroller based circuit to achieve the task using rf technology. We make use of RF trackers on each inmate to detect their presence in the premises. The 2 central monitoring units are used to scan through all inmates as per data fed to it and constantly keep track of each prisoner. Each prisoner is mounted with a rf tracker transmitting a unique prisoner code wirelessly.

Whenever a prisoner exits the facility the centralized system is unable to receive his/her code. At that time the receiver circuitry instructs the controller to tack action against particular prisoner. The System now transmits the prisoner details over to the officers alerting portal to send out instant alert and catch the prisoner before he runs even 50 meters away from Here we use IOTGecko to develop the online alerting portal system to receive input from monitoring device and display alert and sound alarm through internet.

Keywords

Arduino, Prison Safety, GPS, GSM,

RF Tracker, Wearable Device.

1. INTRODUCTION

The prison system in India, as known to everyone, is the not as good as we see in the films. It is quite shocking to know that in a digitally modern country zlike India, the prison system is quite orthodox. So in such an orthodox system the jail breaks are very common and most usual thing to happen. There is no such count but prison escapes keep happen, either at large scale or in smaller scale. A thought of these inmates still roaming around within us is itself very scary. The changes required in the today's prison system is that, that the system should be a bit digitalized rather than using human force to guard the inmates. The digital system to be used can be made reliable that it can't be under cyber attack. There are some more aspects that can be used to make this system more reliable against cyber attack.

2. LITERATURE REVIEW

Bhal et al, have proposed a RADAR solution, RF based person location tracking system, which uses the received signal strength to triangulate the users spatial coordinates. They have constructed a test bed with three base stations B1, B2 and B3.

[6] brought out an invention which discloses a system and method of representing health data of a patient. The invention comprises of a device 100 including a display module 102, a three dimensional sensor camera 101, a processor 107, a temperature sensor, a plurality of modules configured in the device including a template module 103, a healthcare provider module 104, a patient module 105, a processor 107, a server 108 connected to the device 100.

RFID based detection has been proposed in RFID chips are implanted in wrist bands .Through this technology, individuals could be tracked and exact count of inmates can be determined. Monitoring prisoners in prison environment based on RF transmitter and receiver technology ,uses Ultra High Frequency. Prisoner will be having RF transmitter which is mounted on wearable wrist band and RF receiver works on server side. RF signals can penetrate thru obstacles and more reliable than InfraRed Transmission. If the prisoner tries to move out from prison environment, frequency range would break out and server would generate the alarm and message would be sent to the concerned authority.

Wireless Local Positioning System for indoor environment was proposed by Zekavat to locate passengers, employees.

Security guards inside airport. Positioning System is of three types: Local Positioning System and Global Positioning System. Local Positioning System can be classified as Self Po- sitioning System and Remote Positioning System. Self-Positioning System is to locate the nodes position by itself, where as Remote Positioning System is to locate other static/mobile nodes in an environment based on its position. It consists of two main components:

Dynamic Base station to send and receive signals from passengers and other employees and Transponder, that is embedded on boarding pass/wrist bands to send/receive signals. In this method, Base Station can locate all TRX through multihop localization RFID, or Radio Frequency Identification, is a technology where information stored on an integrated circuit, or chip, can be read remotely, without physical contact using energy in the RF spectrum.

An RFID system consists of a reader, or interrogator, which emits an RF signal via an antenna. The chip receives the energy via an attached antenna and modulates the RF signal in order to respond through its antenna so that information can be transferred to the reader.

3.EXISTING SYSTEM

In our existing system, the zigbee protocol is used for the data transferring. It will not transfer location to the receiver side. With the rapid development of security systems, the security system design has been put forward higher requestment. It introduces the wireless technology into prison security system. Modern prison management and wireless sensor network are analyzed; Focus on the overall system structure, as well as the hardware and software design of the system; The key technology of implementing the system is discussed. It can notice to the related working personnel in the prison to make the prison guard arrives on the scene for the first time to deal with the emergency. For that we are moving with ibeacon sensor.We can't transmit the location using the Zigbee protocol. Hardware implementation is not a easy process. No accuracy in process.The response time is very high. So makes time delay.

3.1 PROBLEM DEFINITION

The problem statement is to make a digitally useful system for prison break alerting and monitoring the inmates using IOT.

4. PROPOSED SYSTEM

The Arduino (ATMega328P) microcontroller and I beacon sensor is used for the location tracking of the prisoner in the jail environments. The prisoner's heart beat and health status is monitored by the heart beat sensor and vibration sensor and it is connected to the Arduino microcontroller. The received location send to the computer system to monitor the location using the graphs. Ibeacon will transfer the both location and data transmission. The vibration sensor is attached to the prisoners hand to monitor the status of the person. For testing we have to use the vibration motor.Both location and data transmission is possible with ibeacon sensor. It reduces the hardware implementation time and cost.High reliability.Health status of the prisoners will be monitored properly.

4.1. BLOCK DIAGRAM
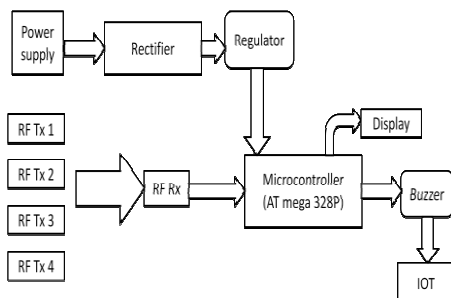
4.1 Block diagram

4.2 WORKING PRINCIPLE

In this, we are going to monitoring the prisoner activities in the jail environments using the Arduino controller and heart beat sensor. It is used for notifying prisoner to the Smartphone or computer devices and to find out current location of person passed on the jail and maintains the record in details of the prisoner for find the location and pointed the person, in many applications and methods IoT is used such as patient monitoring and store navigation, disaster recovery. Evidence of the prisoner obtainable is transmitted to the authorized user, future where location evaluation is performed by calculating times and speed of the person crossed on the road. Then, heart beat senor and IoT is attached with prisoner hand to monitor them. That prisoner's location and health status are monitoring in the receiver side. Position of Bluetooth transmitters' signal levels at certain point data will be stored is known base stations. All that information will be used for store about that person information in the nearest base station. When it comes to using more evidence of IoT further it broadcast the information with low frequency.

[4] brought out present disclosure which provides an electrocardiogram remote monitoring system based on artificial intelligence including a patient 5 monitoring unit with a sensor system and a microcontroller . A server unit is connected to the patient monitoring unit , wherein the server unit includes a database and an artificial intelligence module.

At the same time, the framework provides different query and reasoning service interfaces for different high level applications and registry service. As a result, multiple heterogeneous sensor and stored data sources are integrated on-the-fly by using the semantic ontology data stored in knowledge base. With our framework, data interoperability, information search and retrieval and automatic inference can be realized.The problems of the security systems are in use mainly in three aspects: first, real-time video and clarity is not good, using timelapse video recording mode, and

Often the screen will appear shaking. Second, for the offender's health status, suicidal behaviour can not be found in a timely manner. Third, location problem, it could not always detect the specific location of criminals and could not discover the whereabouts of criminals when a jailbreak occurred. [2] emphasized that Security is an important issue in current and next-generation networks. Blockchain will be an appropriate technology for securely sharing information in next-generation networks. Digital images are the prime medium attacked by cyber attackers.

This design of the prison monitoring system based on Ibeacon, can monitor the vital signs of restrictions on criminals' relevant information, and use this information to analyze the physical condition, activities, status and location of inmates and pin point the correct person for identifier. Moreover, the system also could detect suicide or escaped of the inmates, and to pre-alarm or alarm at the same time. Wireless sensor network is a new technology without applying to prisons currently in the country, the application of the technology in the prison system is very valuable and significant.

In order to monitor the action traces and health conditions of prisoners, in the design of prison monitoring system, the system structure, location and routing protocol are attached great significance.

8. CONCLUSION

In this project we are going to monitor the convict person, using heartbeat sensor, as well as vibration sensor. When they trying to attempt suicide means it will send message to the particular person. This monitoring system important role is alert. If any abnormal values accrue in that heartbeat sensor , vibration sensor and I beacon sensor automatically buzzer will be on and produce sound.In this alert we can find out fault accrued area and find out health functionality. The data includes exact UUID, major, and minor values of ranged beacons, as well as proximity estimations.

9. REFERENCES

[1] S. Abraar, S. Banuselvi, B. Kowsalya; "Prison Monitoring IBEACON and Arduino Microcontroller"; IJSDR1803026 International Journal of Scientific Development and Research (IJSDR); ISSN: 2455- 2631; March 2018 IJSDR | Volume 3, Issue-3

[2] Christo Ananth, Denslin Brabin, Sriramulu Bojjagani, "Blockchain based security framework for sharing digital images using reversible data hiding and encryption", Multimedia Tools and Applications, Springer US, Volume 81,Issue 6, March 2022,pp. 1-18.

[3] Anu PS, Shibu V, Jabir K V T, Preetha Mathew, "A High Security Prison Management System Implementation Using RFID CARD"; Anu PS et al, Int.J. Computer Technology & Applications (IJCTA); ISSN: 2229-6093 | Volume 6(1).

[4] Christo Ananth, Praghash K, Niha K, Narendran S, Marshiana D, Nanjesh BR, Ahila A, G.Victor Emmanuel, D. Angeline Ranjithamani, Selina Annie Retna V "ELECTROCARDIOGRAM REMOTE MONITORING SYSTEM BASED ON ARTIFICIAL INTELLIGENCE", Patent number: 2020101682, Australian Patent, 26th August 2020.

[5] Dr. Bharathi priya C, Dr. Cynthiya J, Dr. Nageswara Guptha M; "IoT based Prisoner Escape Alert and Prevention System"; International Journal of Pure and Applied Mathematics; ISSN: 1314-3395; |Volume 120 No.6 2018, 11543-11554.

[6] Christo Ananth, D.R. Denslin Brabin, P Narasimman, K Niha, T C Subbu Lakshmi, R Muthulakshmi, Stalin Jacob, Jenifer Darling

Rosita, "A SYSTEM AND METHOD OF REPRESENTING HEALTH DATA", Patent number: 2020100445, Australian Patent, 15th April 2020.