JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

FLOOR BASED SENSORS WALK IDENTIFICATION SYSTEM IN SHOPPING MALL SECURITY SYSTEM

Medikonda Venkat Sai [1], Vallepu Chandra Shekar [2], Kola Akash [3], Dr. Janga Prasad [4],
Department Of Electronics and Communication Engineering,
CMR Institute of Technology,
Hyderabad, Telangana, India.501401

Abstract—
Finding groceries and products in a shopping mall is a challenging task for visually impaired people. This project will help them to assist the impaired to encourage their individuality and help them to shop out their required and favourite groceries without any human interaction. The use of the effective RFID technology to find their groceries by using the voice signals and RFID technology. There will be the involvement of components like RFID Reader, RFID tag and Voice Modules. The device provides voice output giving direction to the blind Using RFID technology, the destination of the bus is detected and voice announcement is given regarding the destination of the bus. The location of stick is added advantage to the current multipurpose device. Using RFID technology, the location of the stick is achieved. The blind is provided with a push button to locate the stick.

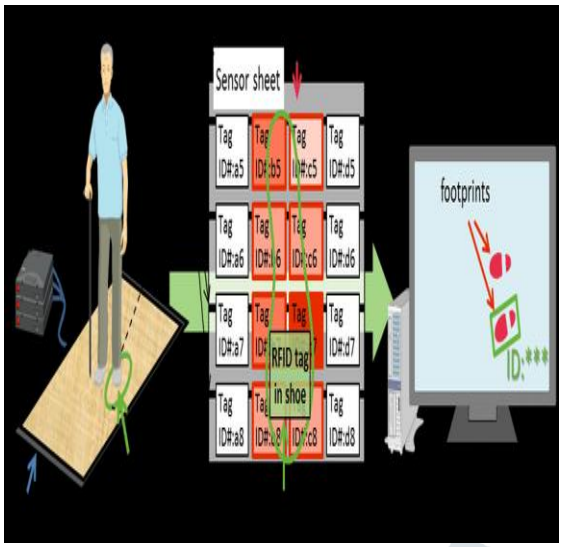
1.INTRODUCTION

According to a statistical report recently released by WHO, at least 2.2 billion people are struggling with vision impairment or blindness. The burden of vision impairment is most significant in those aged 50years and older:31 million out of 36 million (86%) of blind people. Besides low vision caused by old age, vision impairment can be congenital, mostly in the younger age groups. Visually impaired are often challenged in their day-to-day tasks. They often lead a normal life; however, they face many troubles due to inaccessible infrastructure and social challenges. Moreover, the misunderstood perspective of society often leads to inconvenience. Blind or visually impaired professionals also encounter barriers with their ability to interact with the objects. This motivated us to work on the project to help visually impaired people to detect both product name and product price through the RFID Technology and the details will be sent to the Impaired through audio signal. Therefore, this application should be simple, user-friendly, practical and affordable to those with visual disability. People with low vision or complete blindness face difficulty in navigating surroundings they are not familiar with and usually require someone to help them navigate. They often bump into the obstacles present in their way thus hindering their free movement. The conventional white sticks that are used by the blind do not help them to avoid the obstacles efficiently. Only those obstacles that are hit by the stick are identified and can be avoided. However, the obstacles in the surroundings are at different heights and distances, and sometimes cannot be identified by the white canes used. In order to navigate independently and confidently in unfamiliar environments it is required that the blind people are well aware about the obstacles in their path from a distance. This can be achieved by implanting sensors in the traditional white cane, which can then be used to detect the obstacles. There are many technologies that can be used to detect the obstacles in the path from a distance. Smart assistive device indicates an intelligent device that will help the blind in his easy mobility and to carry out his work like any other person. This Device is built using the Embedded Technology, but the application can be deployed by using IOT where by using IOT in collaboration with the Cloud server we can store a large dataset of products.

2.REVIEW OF LITERATURE

The implementation of floor-based sensors in shopping mall security systems represents a significant advancement in smart city technologies. This innovative approach offers precise and real-time monitoring of pedestrian movement, enabling more effective security measures and crowd management within busy urban spaces. Floor-based sensors walk identification systems are a type of security system that uses sensors to detect the movement of people in a building. The sensors are typically installed on the floors of the building, and they can be used to track the movement of people as they walk through the building. This information can be used to identify people, track their movements, and monitor their behaviour. There are a number of different types of floor-based sensors that can be used for walk identification systems. Some of the most common types of sensors include Pressure Sensors, Magnetic Sensors, Accelerometers, Gyroscopes. The data from these sensors can be used to create a unique signature for each person's walk. This system utilizes sensors embedded in the floor to detect and identify individual footsteps, enabling the tracking of individuals' movements throughout the mall. This information

can be used to identify suspicious behaviour, detect potential threats, and optimize crowd control measures.



Floor-based sensors provide accurate tracking of individuals hin a designated area. This accuracy is crucial for identifying suspicious behaviour or tracking the flow of people during peak hours. The system operates in real-time, allowing security personnel to respond promptly to any unusual activities. This rapid response capability enhances overall security in the shopping mall environment. Integrating this system into the broader smart city infrastructure enables seamless communication between different components. It facilitates data sharing and analysis, leading to more informed decision-making processes. Integrating this system into the broader smart city infrastructure enables seamless communication between different components. It facilitates data sharing and analysis, leading to more informed decision-making processes. Ensuring robust data security measures is paramount. Any breach in the system could compromise the privacy and safety of individuals. Implementing state-of-the-art encryption and security protocols is essential. The impact of these sensor systems on the environment, including energy consumption and disposal of electronic components, should be thoroughly assessed. Implementing eco-friendly technologies aligns with the sustainable goals of smart cities.

3.BLOCK DIAGRAM

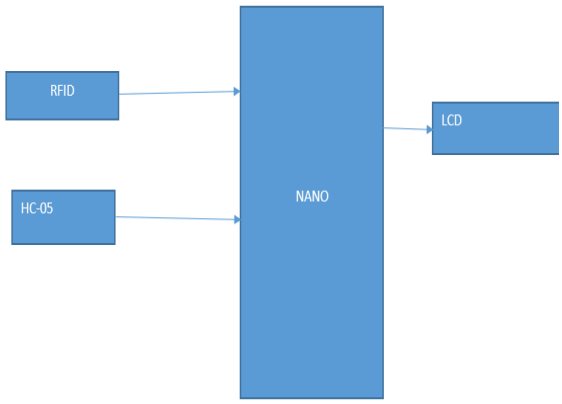


Fig: Block Diagram of Proposed system

RFID READER

Active RFID and Passive RFID technologies, while often considered and evaluated together, are fundamentally distinct technologies with substantially different capabilities. In most cases, neither technology provides a complete solution for supply chain asset management applications. Rather, the most effective and complete supply chain solutions leverage the advantages of each technology and combine their use in complementary ways.

RFID Reader Module, are also called as interrogators. They convert radio waves Returned from the RFID tag into a form that can be passed on to Controllers, which can Make use of it. RFID tags and readers have to be tuned to the same frequency in order to Communicate. RFID systems use many different frequencies, but the most common and widely used & supported by our Reader is 125 KHz.Proposed System

The above Proposed System can be implemented using RFID reader and RFID tag contains all the information the object such as product name, price, and offer and stored in store server. Impaired person will be holding an RFID reader, as soon as he reaches the wrack where products are placed. RFID detector detects the RFID tag and sends the tag number to the server. The server will send the information stored of the RFID tag to the user's smart phone through voice command. In the smart phone the text to speech conversion takes place. An audio message is played to assist the user in navigating and identifying the items. The system will work without any human help. No need to carry any costly hardware for visually impaired people only they need smart phone and RFID reader.

5. Methodology Used

Pressure sensors, acoustic sensors, or other appropriate sensor types are installed at strategic locations throughout the mall, ensuring coverage of all walkways and common areas. Sensor data is collected continuously, capturing the unique signatures of individual footsteps. This data includes information such as pressure, vibration, or acoustic patterns. Collected sensor data is pre-processed to remove noise, filter out irrelevant signals, and prepare it for further analysis. Relevant features are extracted from the pre-processed data, capturing the distinguishing characteristics of individual footsteps. These features may include pressure distribution, vibration patterns, or acoustic signal characteristics. Machine learning algorithms are employed to identify individual walks based on the extracted features. This involves training the algorithms on a dataset of labelled walk data to learn the unique patterns associated with each individual. Identified walks are tracked across the mall by associating them with corresponding sensor readings from different locations. This allows for the reconstruction of individual movement paths. The system analyses movement patterns to identify suspicious behaviour, such as loitering, or rapid changes in direction. This information can be used to alert security personnel for further investigation. Movement data can be used to analyse crowd patterns and identify areas of congestion or potential bottlenecks. This information can be used to optimize crowd control measures, improve traffic flow, and minimize congestion.

6.Results

The telemedicine system by this way enhances time to time remainders of taking medicines for elderly people, and also successfully helps in remanding for taking medicine for elderly people and the main objective of this telemedicine remainder is

that it improves the quality of life for patients and their families. so by this reamending system we can see betterment in their health as timely remainders decreases the chance of missing the medication. so in this way this telemedicine system can be part of elderly people and patients better health.

7. Conclusions

We can draw following conclusions from this paper. We used an appropriate technology that would help visually impaired people to shop their necessities by being self-reliant. This technology will accommodate all the facilities that would help visually impaired people. In addition to this, the selection of proper RFID technology, Microcontroller has been taken such a way that the whole device will be at the reasonable price to afford. We conclude that this device is easy to use as it is just the concept of having a point of contact with the reader and the tag through which the product details will be given to the impaired. We also conclude that , the RFID range may be the concern, but we conclude that we can deal with the large distance data transfers between a reader and a tag by using a reader modules of higher power

Acknowledgment

We are extremely grateful to Dr.M. Janga Reddy, Director, Dr.B. Satyanarayana, Principal and Dr.K. Niranjan Reddy, Head of Department ,Electronics and Communication Engineering, CMR Institute of Technology for their inspiration and valuable guidance during the entire duration.

We are extremely thankful to our guide Dr. Janga Prasad, Department of ECE, CMR Institute of Technology for his constant guidance, encouragement and moral support throughout the project.

References

[1] https://ieeexplore.ieee.org/document/7808083

[2] Dr. K .V.K.K Prasad “Embedded /Real-Time Systems: concepts, design & programming”

[3] Stapleton-Gray R. Scanning the horizon: A skeptical view of RFIDs on the shelves. 2005; Available from: www.rfidprivacy.us/ 2003/papers/stapletongray3.pdf.

[4] The 8052 Micro controller and Embedded Systems - Muhammad Ali Maizidi.

[5]http://www.lbenchindia.com/finalyearprojectdatasheets/APR9600%20user%20manual.pdf