Smart Guide at Museum

[1]Pragnya N, [2]Pruthvi K Narayana, [3] Giresh Kumar E, [4] Pavithra P, [5]Mr Praveen. A [1 2 3 4]Department of ECE, K S Institute of Technology, Bengaluru, India [5]Asst. Prof., Dept. of ECE, K S Institute of Technology, Bengaluru, India

Abstract - This paper is designed to avoid the human intervention in the museum by implementing a smart guide system. The model acts as an excellent device for automatic information access & reference in the museum. This ensures the enhancement of user experience at museums using RFID for multiple language selection. Here, the highlight of the model is its ease of use & flexibility. Thus it is associated with a set of Voice Chips, so as to convey the pre-stored information about the artifact when the respective RFID tag is scanned with the RFID reader. The additional setup for this model is Raspberry pi which is used to display the information about the nearby tourist places.

Index terms **-** RFID-Radio Frequency Identification.

I. INTRODUCTION

In the scientific world, Human hopes to do daily life activities easily and efficiently. Here arises the need of tools and machine which reduces the workload. The purpose of the model stands for the same reason and provides genuine information about the monuments in a museum**.** The information provided defines user requirements, location and encouraging use, physical access, language selection, privacy, help, input, output navigation and customization. It provides clear and simple structure to the user to access the information. The artifact is associated with three different RFID tags. Each RFID tag is assigned with a information in particular language. When the respective RFID tag is scanned with the low frequency RFID reader, as the receiver pin of the RFID reader is interfaced with the transmitter of the Arduino Mega which in turn triggers the Mp3 module to fetch the information about the artifact in the form of audio signal to the user.

II. LITERATURE SURVEY AND SUMMARY

The paper proposes a new wireless radio frequency identification (RFID) repeater system, which is entirely a passive and cost effective with low frequency RFID tags of range about 125 kHz. After reading the tags, the RFID reader transmits the unique id using serial communication to the Arduino Mega using UART. The RFID reader can support bi-directional functionality such as reader-to-tag as well as tag-to-reader communication. The memory storage capacity of the RFID tag is up to 12 bytes [1].

The paper proposes about the different RFID tags used to access the information about the artifacts in favorable language of the user. This will retrieve the data when the tag is matched to the required artifact tag. Once the tag is matched, the next step is to transmit the information to the Arduino Mega 2560 the program for the design implementation will be loaded on this device and the system functionality will be verified which in turn drives signal to the Mp3 module in form of audio speech [2].

The paper proposes an application implemented on an Arduino development system using an ATMEGA 2560 microcontroller. The program controls outputs in sequential order and it is loaded onto the memory of the microcontroller. As it works sequentially each output is activated only when the system receives information about the previous command. The commands are highlighted by an optical LED display as an output function & circuit is provided with galvanic separation by the usage of op-to-couplers. The outputs could be analog in nature, but there should be analog-to-digital converter in turn to represent the information in digital form. The output of MC is used to control the Mp3 module [3].

The paper proposes about the working principle of Hc05 Bluetooth module in the domain of wireless communication and implementation of interfacing the Arduino Mega 2560 with the Bluetooth module. The information exchange between the two different nodes without any electrical conductor is called wireless communication. The Bluetooth module is one of the most used wireless communication protocols. The wireless communication increases its prominance due to the resolving the problem of mobility in the network topology. The coverage area of Bluetooth would range up to 10 meters with the data rate of 3 mega bits per second. It is best suited for the applications of short range radio communication between the different electronic devices. The Bluetooth module is even cost effective due to its availability is not only in Android or smart phones but also in the basic mobile phones. The connectivity speed of the Bluetooth module is quite economical. The main aim of this wireless communication protocol Bluetooth is low power consumption and ensures security for both stationary as well as mobile devices. The different power modes available in the Bluetooth module create an flexibility for an adaptive environment. It adapts the particular power mode depending on the requirement. The feature of security in Bluetooth is highly efficient due to its authentication capability using encryption keys. The appropriate pin codes should be used in order to pair the devices for the exchange of information [4].

This paper proposes about the era of the smart phone technology the museums have started implementing the different mobile applications for purpose of providing the basic genuine information about the artifacts present in the museum. The mobile application acts as the channel between the visitors and the museum. It functions as a means of advertising and informing the information about the tourist places around the museum with the additional information like bus fare etc. The design consists of the master database which is interconnected to the various sub databases of the museums. This allows the feature of accessing the information without being on the museum grounds [5]..

The paper proposes about the implementation of sensor network technology for the location information using the intelligence guidance system. This system involves the active interaction with an system which allows to access the information about the relationship between the different artifacts present in the museum. In addition to the voice output from the mp3 module which is interfaced with the Arduino Mega the presentation information about the artifact can also be done in picture visualization and text message output. This involves the ontology database in backend system in which the data base is represented in the graph. The time based beacon source is used to increase the power capacity [6].

The paper proposes about the designing the architecture of IoT which is used to design smart museum in static cultural space that becomes intelligent thanks to the definition of an innovative model of sensors and services. Not only people will be connected to the internet, objects will also be connected to internet and this combines with sensor technology which allows the remote management of the objects and monitoring of conditions and changes, in the future it may improve preservation, valorization and fruition of culture heritage [7].

III. GAPS FOUND IN THE LITERATURE

In paper [1] Employing active cancellation techniques for enhancing isolation where antenna separation is not practical or nulls in the radiation pattern cannot be exploited. Signal from the transmit side can be tapped off, it can then be adjusted in amplitude and phase such that when it is combined with the leakage signal, it will destructively interfere with itself.

In paper [2] This can raise privacy issues amongst users who do not wish to be monitored. However, this could be easily alleviated by having the option of turning the RFID reader off. The other issue arises in authentication and authorization while connecting to the museum Wi-Fi network.

In paper [3] If one of the commands hasn't been executed, the command sequence starts from the beginning. The control frequency cannot be modified within the limits of the Arduino board and also the number of commands can grow to the maximum number of output pins.

In paper [4] Although most mobile devices and many PCs today support Bluetooth, the technology comes with a few disadvantages, including slow data speeds, poor data security and shortened battery life.

In paper [5] As these applications download all available content into the mobile device, they require significantly larger amounts of available memory, and this also serves as an obstacle to users. Another disadvantage of the applications mentioned above involves the flexibility of the application content to future changes in exhibitions.

In paper [6] The query method is practically different from the conventional SQL like system. The data structure in the expert system is also different from that of the relational data system.

In paper [7] The model was equipped with a standard system of audio guide and it is aimed to assist in a static mode the visitors. this traditional audio guide system does not take into account the user's position.

IV. CONCLUSION

As this project is based on AT Mega 2560, Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC's with the help of growing technology, this module will provide voice announcement based on the RFID tag scanned.

REFERENCES

[1] Sabesan, S., Crisp, M., Penty, R. V., & White, I. H. (2013, April). Passive UHF RFID interrogation system using wireless RFID repeater nodes. In 2013 IEEE International Conference on RFID (RFID) (pp. 136-143). IEEE..

[2] Mody, A., Akram, M., Rony, K., Aman, M. S., & Kamoua, R. (2009, May). Enhancing user experience at museums using smart phones with RFID. In 2009 IEEE Long Island Systems, Applications and Technology Conference (pp. 1-5). IEEE

[3] Gunputh, S., Murdan, A. P., & Oree, V. (2017, May). Design and implementation of a low-cost Arduino-based smart home system. In 2017 IEEE 9th International Conference on Communication Software and Networks (ICCSN) (pp. 1491-1495). IEEE.

[4 Cotta, A., Devidas, N. T., & Ekoskar, V. K. N. (2016). Wireless Communication Using HC-05 Bluetooth Module Interfaced With Arduino. International Journal of Science, Engineering and Technology Research (IJSETR).

[5] Kovavisaruch, L., Sanpechuda, T., Chinda, K., Wongsatho, T., Chaiwongyen, A., & Wisadsud, S. (2015, August). Museums pool: A mobile application for museum network. In 2015 Portland International Conference on Management of Engineering and Technology (PICMET) (pp. 1230-1235). IEEE.

[6] Chang, W. T. (2017, November). Proactive guiding with iBeacon in Art Museum. In 2017 Pacific Neighborhood Consortium Annual Conference and Joint Meetings (PNC) (pp. 110-115). IEEE.

[7] Chianese, A., & Piccialli, F. (2014, September). Designing a smart museum: When cultural heritage joins IoT. In 2014 eighth international conference on next generation mobile apps, services and technologies (pp. 300-306). IEEE.