

Smart Museum based on IoT

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Abstract - In the current era everything is developing with advance technologies one of such technologies is Internet of Things (IoT). IoT is a technology used to connect all the required devices with each other as per the application using internet. It provides smart way of working with smart environment. Nowadays young generation is more interested to know about our ancient heritage. Museum is the place where they will get to collect more information about the same. To get the attention of visitor we developed the device using IoT. The smart museum based on IoT relies on wearable device or a smart phone that acts as a guide of museum. Thus everyone can easily access the art gallery and history through smart device using mobile application.

Key Words: IoT, Museum, Wearable Device, Smart Phone, Bluetooth

1. INTRODUCTION

Museum acquire, conserve, research on, exhibit and communicate for the needs of study, education and delight, material evidence of individuals and their environment. All the objects in the museum form a composite picture of our cultural heritage. Once we inherit a museum, there are usually some sorts of guide system, like traditional multilingual tour expositor, special for expertise explanations, touch-screen computers for inquiries and tape or CD guide machine. All of them seem in touch different sorts of problems. Traditional multilingual guide and special sections for expertise and explanations require high expense on training and wages. IOT, which incorporates the augmentation of the web to little and minimal effort "things" that are thought to understand smart environment with a selected end goal to supply new services to the users. We have used IOT in our project so that people can properly understand actual historical concept in audio form.

2. LITERATURE SURVEY

In the literature, there are a several works tending to the previously mentioned issues, yet none of them gives an adaptable and adaptable arrangement which will lookout of

The considerable number of issues in one framework. One of the key features of the proposal is represented by the indoor localization mechanism, which currently is a crucial and challenging research topic.

In [1] authors proposed the system architecture of a wearable device which will capture the video of users movements and has the potential to try image processing and sends only the similar images to the cloud processing center to improve the performance to the complete system and localization information is obtained by a Bluetooth low energy (BLE) which is installed within the museum.

In [2] author design and validate a context aware content delivery system employing a Raspberry Pi which plays the role of beacon. An area database has been found out to hold the specified contents, this is able to be queried according to the ID of the beacon. Author implemented a non-traditional way of content delivery System that delivers the cultural contents. An android application is provided to the user which features the conversion of the image to the extraction of the data.

In [3] author design and validate a context aware content delivery system employing a Raspberry Pi which plays the role of beacon. An area database has been found out to hold the specified contents, this is able to be queried according to the ID of the beacon. Author implemented a non-traditional way of content delivery System that delivers the cultural contents. An Android application is installed beforehand on the mobile devices of the user. Raspberry pi being used helped in the transmission of the data updated in the back-end server.

In [4] author proposed the ability to provide users with value-added services through low-cost, low-cost intelligent object is very interesting in many fields. An intelligent IOT based museum is based on a portable device that acts as a museum guide. The portable device used has the ability to capture the images and send these to the processing centers to update the information about the positions. The system dynamically interacts with the server to update and add the data that the user generates and wishes to add to the current data. Thus the user can access the data stored in the server regarding the artifacts using the application provided in the mobile.

In [5] author investigates the utilization of knowledge in Radio-Frequency Identification (RFID) technology for museum applications in Turkey. This paper analyzes the utilization of RFID technology in museum and technological adaptation experiences across the planet to deal with suggestions for Turkish museums so as to beat a number of

the issues with inventories and security tracking , also on provide dynamism in presentation. The RFID technology is applied in Turkey for various inventories of the artifacts, monitoring of these artifacts in the museums. The working staff in these places need to be made aware about the technology of RFID.

3. SYSTEM ARCHITECTURE

An administrator of a museum uploads images of all the artworks, statues and also uploads information content(text, audio) associated with those images on the cloud.

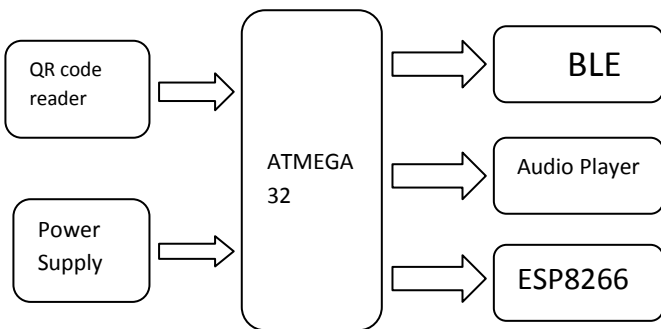


Fig 3. 1: Block Diagram

3.1: Block Diagram

We are using ATMEGA32 microcontroller and it needs some basic requirements. First it needs 5V power supply for its operation. The power supply contains step down transformer 230/12V, which steps down the voltage to 12V AC. This is converted to DC using bridge rectifier and it is then regulated to +5V using voltage regulator 7805. ATMEGA32 also needs manual reset to execute the code from beginning. It also has inbuilt oscillator of (1-8) MHz . The above block diagram consists of QR code reader which gives input to the microcontroller, BLE is used to fetch the information between controller and mobile phone, WiFi module is used to collect the information from cloud.

3.2: System Operation

Here with the help of smart phone a person can scan the QR code related to an object that is present in the museum. Using smart phone’s Bluetooth the information send to the ATMEGA32 controller. Then the controller collects the information related to that object from the cloud, here WiFi module is intermediate object between controller and cloud that is used to collect the information from cloud. Again with the help of smart phone’s Bluetooth, the controller sends the information collected from cloud to the user’s smart phone and then the user will get the information in audio format which is the required output. The conversion from text to audio form is done with the help of an smart phone application.

4. SIMULATION RESULT

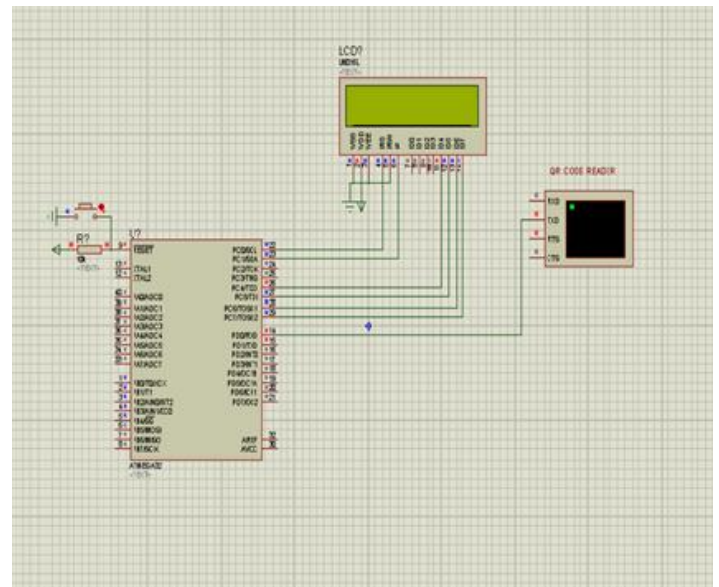


Fig 4.1: Before Simulation

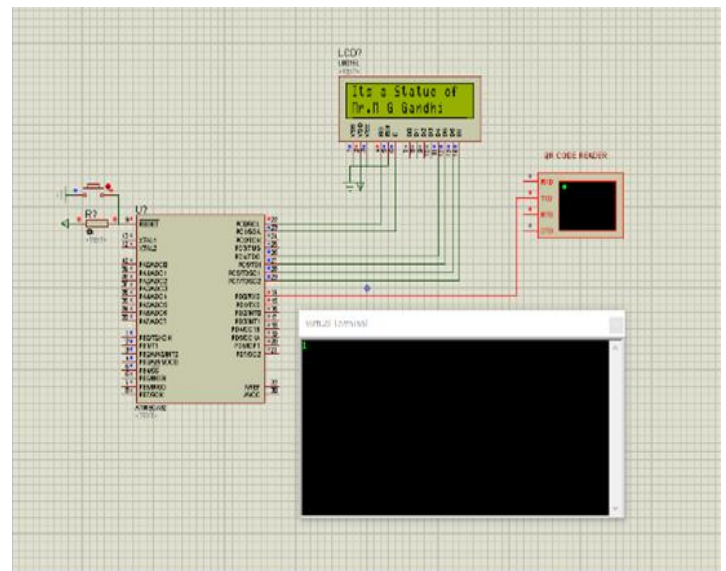


Fig 4.2: After Simulation

In simulation result fig 4.1 shows that when we are not scanning the QR code reader then LCD display does not show any information about museum’s object. In fig 4.2 it shows that when we are scanning the QR code reader then LCD display shows the information about the particular object.

5. RESULT

In this paper, a system for a smart museum in which the smart phone plays the role of wearable device was implemented. In this the main focus of the system is to gather the information from the server or cloud and then convert it to the audio form so that the user will understand

the concept of particular historical or cultural heritage information in convenient ways.

6. CONCLUSION

The paper presents our work in Smart Museums project, which has the aim to attract more people in museum from different places and to make advance visitor's experience and make easy for the visitor to explore museum. And also this gadget can help the visitor to understand better an artwork.

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