E-Guide for Tourism Using Raspberry Pi

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Abstract— The goal of system is to make tourism more attractive, interactive & memorable. Visitors are not always provided with guide. Above all there is no certification for them, so we can't trust completely on the information provided by them. Our system is going to replace manual guide by electronic guide which provide self-learning environment, which include historical importance, specifications, photo gallery of the place, along with this we provide two types of services one is entertainment like culture of place, local tradition, folk songs, food etc. and other is emergency services like medical assistance, security etc. The Bluetooth dongle is used which provide unique MAC address placed at each location is received by user module, then compares it with the corresponding identification stored in the database. When a match is found, detailed information is retrieved. So the user can take an audio as well as image tour of the museum. The information will be provided with help of pictures and text along with audio format System. E-guide uses various pedagogical strategies to make content interesting. This is really going to make revolutionary changes in the field of tourism.

Key words: Beacon, MAC, Bluetooth, Database

I. INTRODUCTION

Tourists are not always provided with guide. The general problems with traditional guide are, they are priced, demanding, availability & may come with linguistic barrier. Basically when we visit any tourist place there will be two options in front of us that is local guide and tourist agencies. Information provided by the local guide may be unfaithful or unreliable. There is no any kind of deal with the guide so we can't completely trust on him. The guide may be cheat with the visitor. If the guide does not have any experience about their work then we cannot get complete information about that place. To avoid those problems we develop this Electronic Guide system. E-guide uses various pedagogical strategies to make content interesting [1].

Our system is going to replace manual guide by electronic guide which provide self-learning environment, which include historical importance, specifications, photo gallery of the place, along with this we provide two types of services one is entertainment like culture of place, local tradition, folk songs, food etc. and other is emergency services like medical assistance, fire alert, find way out etc. This device will provide information in terms of text images and play the audio clip. It is handy device therefore carrying from one place to another is very easy. The information will be provided with help of pictures and text along with audio format System. This is really going to make revolutionary changes in the field of tourism.

II. LITERATURE SURVEY

The Exploratorium is a hands-on science museum in San Francisco that uses the ex-spot system, developed in cooperation with the University of Washington's Computer Science and Engineering Department and Intel Labs Seattle. It is intended to support, record, and extend exhibit-based, informal science learning. Its users can bookmark their exhibits of preference, create photographs (use their RFID tags to activate cameras), and access them later via the museum's kiosk or via the internet [2].

The Museum of Science and Industry in Chicago opened a new 5,000 square foot permanent exhibition called "NetWorld" where visitors use RFID technology to learn about the Internet. First, they design personal avatars that are stored in the exhibition's network. Then, using their NetPass cards (with embedded RFID chips), the avatars accompany them throughout the exhibition, interacting with them as they learn about bits, packets, and bandwidth. With each new exhibit, the network stores visitors' ID numbers and displays their avatars to help them through new experiences. To avoid issues of personal data privacy, no personally identi_table information is collected when the cards are issued [3].

III. PROPOSED SYSTEM

E-Guide System has basically two concepts it will detect unique location and display the information relate to that location. While implementing the project two aspect will be detecting the location for that purpose each location should be provided with some wireless technology which one task and another one is user device For the purpose of the detection of location we focused on Bluetooth based location detection for reliability.

A. Location Detection Methodology:

For this purpose we decided to use Bluetooth module, which is small in size, low transmission energy, and long battery life device. As it is work on the Bluetooth protocol, each module has its own unique MAC id. User device will read this unique number for detecting the location. This device is more suitable for this purpose because it having very less maintenance.

B. User Device:

User device mainly function as detecting location by reading unique id number of each location. We are looking for more comfort and friendly environment for user hence select android platform i.e. device will booted with android 4.0.1 Kit Kat. While developing this device, has two main task assembling and installing drivers into the module another is developing Android App. The block diagram of user module is as shown in figure
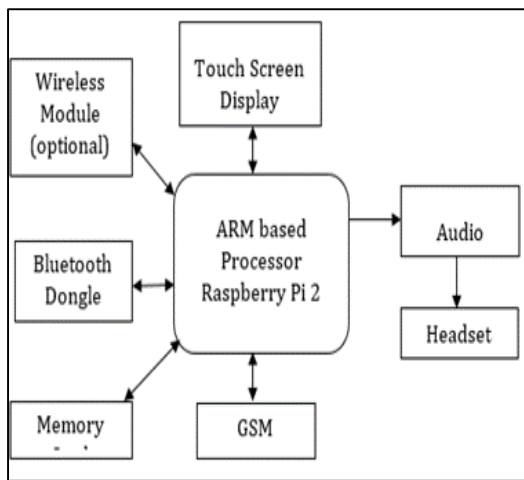
Fig**.** 1: block diagram of user device

IV. WORKING

E-guide is electronic guide, mainly contains a Raspberry Pi 2, a touch screen display, a Bluetooth. Raspberry Pi 2 module is considered as main processing hardware which processes the text, images, audio file and interface with all above mentioned modules. Touch screen display acts as normal Graphical User Interface [GUI]. Bluetooth module is core of system, each object or spot is provided with the Bluetooth module which is very small size long battery life Bluetooth like device, provide unique MAC id to each location. When any object or spot will come in the range of E-guide with help of Bluetooth dongle unique make id of particular location will be identified wirelessly with help of radio waves and then compare it with the corresponding identification stored in database and relevant information is retrieved. All the information will be stored in memory card. Basically this App will function as main base of this project. This will search for the Bluetooth device on user module. Initialize it with help of drivers installed automatically. It will continuously monitoring the field for reading Bluetooth device. This app also require media support for displaying the images and playing the audio clip. As android OS has inbuilt Media player our app should be able to communicate with it. Basically this App will function as main base of this project. This will search for the Bluetooth device on user module. Initialize it with help of drivers installed automatically. It is going to continuously monitoring the field for reading Beacon device. This app also require media support for displaying the images and playing the audio clip. As android OS has inbuilt Media player our app should be able to communicate with it. SMS monitoring for processing the notification facilities.
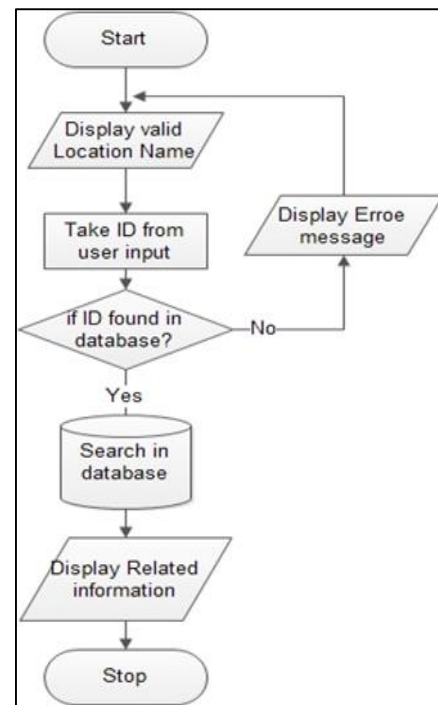

Fig**.** 2: flowchart of detecting the location

V. IMPLEMENTATION PLATFORM

The user module is developed with help of the raspberry pi module. The touch screen display 3.2'' TFT RPI v4, Bluetooth dongle are interfaced to the raspberry pi module.

A. Raspberry Pi Module:

Raspberry Pi 2 Model B is second generation Raspberry Pi has ARM v7 processor, it can run the full range of ARM GNU/Linux distributions, including snappy Ubuntu Core, Android as well Microsoft Windows 10 [5].

Fig. 3: Raspberry Pi Model 2

Features:
– Broadcom BCM2836 Soc chip
– Quad-core ARM Cortex-A7core architecture
– CPU -900MHz
– RAM 512MB
– four USB port, one Ethernet Port

B. Touch Screen Display:

Touch screen display 3.2 TFT RPI V4 is compatible with Raspberry pi model A/B board. It is resistive touch panel display also support on screen keypad. It support for GUI for video as well [6].

Fig**. 4**: 3.2 TFT RPI V4 display

Features :
‒ 3.2 inch TFT LCD screen
‒ Resistive touch panel
‒ 4 User defined press buttons

C. Bluetooth Dongle:

Bluetooth dongle is capability to Raspberry pi superfast with USB BT 4.0 adapter. This adapter is backward compatible with v2.1 and earlier and low energy.

Fig**. 5**: Bluetooth dongle

Features
‒ Typical -80dBm sensitivity
‒ Up to 4dBm RF transmit power Low Power 1.8V Operation

VI. RESULTS

The device module is built successfully by interfacing Raspberry Pi module Bluetooth dongle, touch screen display. The Android OS is successfully installed on device.

Fig**. 6**: raspberry pi based user module built

Successfully developed the android application and installed on device. This application detects the location and fetches all related information successfully.
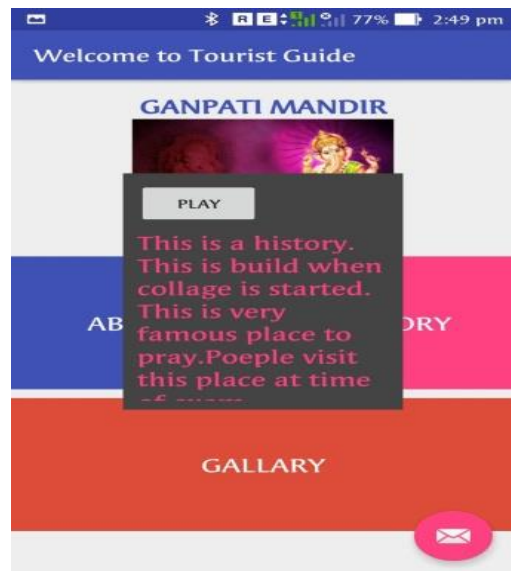

Fig**. 7**: Location successfully detected by Device

VII. FUTURE SCOPE

This device will be the future of the tourism industry. The human being have tendency to be attract toward new things. This device will go to create very vast market as part of attraction for tourist. We can implement this system in indoor environment like in any Museum as well as in outdoor environment like any Tourist place as Matheran, Mahabaleshwar, Rajiv Gandhi Udyan, etc. like anywhere where we imagine. Our imagination is the limit for scope of this project.

ACKNOWLEDGEMENT

VIII. CONCLUSION

This project is really brought revolutionary change in the field of tourism. Here visitor get 100% authenticated and pure information that will increase the scope of researcher as well as bring the cultural and historical importance of many place in front of the world with very attractive way. It will make tourism very interactive. This system is also cost effective. The services like medical assistance, security of tourist are also concentrated in system.

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