TRAVEL HANDS FREE and ACCESS AUTHENTIC TOURIST PLACE INFO USING QR CODE

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Abstract: Cultural heritage comes to life if it can effectively spread knowledge and foster societal cultural development. Therefore, communication is essential for giving visitors—especially tourists—information. Connecting with clients in the heritage business requires the use of information technology, which offers a variety of channels via which information can be provided. The quality and quantity of visitors' interactions with heritage can be improved thanks to technological developments like QR Code that have increased in recent years. On signs and advertisements, there are squares with a black-and-white pattern known as quick response (QR) codes that link to more information. Numerous uses for QR codes have been developed throughout time. They were initially created in the middle of the 1990s as a more practical alternative to traditional barcodes for usage in the automotive industry.

Keywords: Heritage, QRCode, Cloakroom, Information.

I.INTRODUCTION

The project is a software program for smartphones that helps to provide clear information. It makes it straightforward for tourists to visit popular locations and make use of the services. They will find it interesting and helpful to be informed of the legacy, its setting, and the rules to follow when visiting a tourist attraction. Tourists can learn more about the locations of cultural treasures through the usage of QR codes. Modern technology makes use of QR codes, therefore the app attempts to enhance visitor interaction and experience. Tourists can use the app to store their bags as well. The software offers surrounding businesses a method to generate revenue.

II.LITERATURE SURVEY

Find, Point and Scan: QR Codes for Libraries, author: Iranna M Shettar, Conference Paper April 2017.In this paper they are providing brief introduction for QR code and the difference between the Q R code and the bar code and the main aim of this paper is to use the QR code in the libraries to know about the book in the library and what are all the activities are going going in the library like how many of taken the book from the library and on what date day have to return the books all things are updated in system automatically by using the QR codes which are sticked on the each and every books [1].

QR Code Application for Geometric Location and Information of Historical Structures Authors: Ercan Işık, Mehmet Fatih Isik, Mehmet Akif Bülbül, Ibrahim Baran Karasin, Conference Paper · September 2017.In this paper they have generate the QR code for the particular historical building based on identity card of the particular building and there are two panels called admin panel & operator panel where admin panel can generate the QR code but the ID number of the particular building is an important variable and the main thing is the process in this work will fast only via internet.[2]

USE OF QR CODE: A STEP TOWARDS DEVELOPMENT IN INDIA,authors: Maheshwari Antosh Dyade, Yamini Vaijinath Bhande, Sep -2017.In the museum collection this is the first experiement they have implemented the generation of the QR code.they had generated the QR code for ech and every specimens know about know all the details about them.[3]

QR-code generator, authors: P. Sutheebanjard, Wichian Premchaiswadi, November 2010. In this study, a metadology for making QR codes is presented, which users can enter into a web browser to make for themselves. Here, the popular libqrencode c library was used in conjunction with the Drupal module to create the user interface, which primarily involves producing QR codes through a web browser.[4].

III. EXISTING SYSTEM

The tour guide has the biggest impact on whether or not your vacation will be one you remember for a long time. By using a knowledgeable tour guide, you may create lifelong memories of your vacation. You might learn a lot on the tour while while fully enjoying it. Providing interesting facts is only one aspect of a competent tour guide. He or she is a person who is well-versed in the history and culture of a certain area. However, using a tour guide has drawbacks of its own.

Drawbacks of Existing System

1.   Tourists need to pay extra for a guide.
2.   Difficult to find locals as tour guides.
3.   People like to visit places on their own and don't like their privacy to be invaded by a tour guide.
4.   People don't want their travel experience to be ruined by unprofessional guides.

Tourists are duped by guides. The big shop owners pay top class guides ahead at the beginning of the year to make sure they deliver the tourists to the specified businesses. Tourists miss the sites that exhibit cultural diversity as a result and feel duped.

IV.   PROPOSED SYSTEM

Under the proposed system, tourists wouldn't need to rely on a tour guide. Here, we're developing an app that uses a QR code to store location-specific information. An optical scanner, which is typically built into or created for other devices like a mobile phone or tablet, may read a two-dimensional array known as a Quick Response Code that employs an alphanumeric code. owing to the codes' easy readability, inexpensive production costs, and compatibility with a variety of media (paper, cardboard, etc.), and capacity to hold a sizable quantity of data, the QR Code technology, which was first utilised in the automobile industry, has quickly extended to other industries.

Advantages of Proposed System

1.   The app provides clarity of communication.
2.   It makes monuments, sights, and amenities easily accessible to visitors.
3.   Knowing about the heritage, its context, and the guidelines to be followed when visiting a place of interest will be entertaining and useful for them.

V.SYSTEM ARCHITECTURE

Fig 1 Architecture of Heritage info using QR code

VI. MODULES

A. Admin

1. Login:-Admin can login with the predefined username and password.
2. Add Location:-Admin can add the location which is city name.
3. Add Information & Audio about tourist site:-After adding the city name admin can add the tourist spot with all the details like tourist spot name, Description of the tourist spot, address of the tourist spot, audio description about the tourist spot in the three different languages like kannada, English, hindi and tourist spot photo.
4. Generate QR code:-After adding the Information Generating the QR code. QR code is generated based on the X-Zing Package it is the Java Package.
5. View users:-Admin can view the users which means tourists who are registered for the application.
6. View locations:-Admin can view the Locations which are added by the admin only.
7. View feedback/comments:-Admin can view the Feedback which is given by the tourist about Tourist spot and the Cloak room also.
8. Admin can Discuss Various Things in discussion forum:-Admin can create one topic in the discussion forum to discuss about the particular place and admin can also take part in the other discussion forum which are created by the different users.

B. Cloak room owner

1. Register:-Cloak room owner have to register to the application by entering the name, contact, email, username, password and the profile photo.
2. Login:-After registration cloak room owner can login to the application by entering valid username and password.
3. Add Price, Working Hours, Address:-After login they can add the details of the cloak room like name, contact number, address, opening time, closing time, how much they will cost to keep the luggage, and the photo of the cloak room.
4. Receives Booking:-Cloak room owner receives the message after the tourist books the cloak room, they will receive a message like the person who booked the cloak room and for which date and time they will booked the cloak room.
5. Receives luggage:-Owner receives the luggage and by confirming the booking ID and owner will generate the OTP and will sent to the tourist person.
6. Return luggage:-Verify the OTP and Return the luggage back to the tourist spot.
7. View profile:-Cloak room owner can view their own profile.
8. Edit profile:-Cloak room owner can edit their own profile.

C. Tourist

1. **Register:-**Tourist person have to register to the application by entering the name, address, contact, email, username, password and the profile photo.
2. **Login:-**After registration the person can login to the application by entering the valid username password.
3. **View/Edit profile:-**Tourist person can edit or view their own profile.
4. **Book Cloak room:-**Tourist person can book the cloak room to keep the luggage.
5. **Submit Luggage:-**After booking the cloak room tourist person can submit the luggage to the cloakroom by entering the booking ID.
6. **Receive otp or key:-**After submitting the luggage tourist person receives the OTP.
7. **Scan QR code of heritage site:-**Tourist person can scan the QR code which is placed in the tourist spot.
8. **View information/listen audio got from QR code:-**After scanning the QR code the tourist person can view the text information about the tourist spot and also the they can listen to audio information also.
9. **Give feedback/comments about heritage site:-**Tourist person can give the feedback or comments about the tourist spot.
10. **Take Back Luggage:-**Tourist person can take back the luggage by entering the valid OTP.
11. **Give feedback about cloak room:-** Tourist person can give the feedback or comments about the cloak room.
12. **Discussion forum:-** Tourist person can create one topic in the discussion forum to discuss about the particular place and tourist person can also take part in the other discussion forum which are created by the different users and the admin.

VII.QR CODE GENERATION

"Quick Response" is referred to as QR. Despite their apparent simplicity, QR codes may actually store a lot of information. The reason a QR code is called a Quick Response code is because, no matter how much information it contains, scanning it should quickly get the user access to that information.

A QR code is a type of barcode that can be easily read by a digital device and contains data as a series of pixels arranged in a grid with square corners. Because many smartphones have built-in QR readers, QR codes are frequently utilised in marketing and promotional campaigns. In a supply chain, they are typically used to track information about the products. They have proved essential in current initiatives to monitor coronavirus exposure and stop the virus's spread.

Denso Wave, a Toyota subsidiary based in Japan, created the initial QR code technology in 1994. They needed a more exact method of tracking the automobiles and parts during production. To do this, they created a specific kind of barcode that could decode alphanumeric, kanji, and kana characters.

In this project we are using the **Z-Xing** library to generate the QR code.
ZXing ("Zebra Crossing") is a well-liked Java API for processing QR codes. We will use the "core" component of its library, which contains several parts, to create QR codes.ZXing can have the capability of both store the data and generating the QR code.

The steps we have to follow to create the QR code using Z-Xing :-
1.   Add or download the ZXing library to the project.
2.   After downloading, add it to the classpath. Or add the following dependency in **xml** file.
3.   Write the program for generating the QR code.
4.   Write the program for reading the QR code.

METHODOLOGY

Coding procedures:

step 1:- The first step involved creating three covert QR codes with three different texts (alphanumeric, unicode, and numeric) image and audio also separately encoded in them using the ZXing route in MATLAB (an open Java source code library).In figure 2, the resulting image is displayed. The.png format used to store these photos is lossless. The photos are further read in MATLAB to provide a logical two-level image. The generation's pseudocode is:

1) The encode qr function   * This function creates a QR code that contains a string message. The QR code's size can change. This function requires the installation of Zxing (http://code.google.com/p/zxing/), as well as the presence of core/core.jar and Javase/javase.jar on the classpath..*\

2) Add the text that will be encoded in qr code.

3) image = qrencode(type message, size(21,21))   To encode a message as a qr code with the dimensions (21, 21), call the encode qr function, which will return an image.

4) Save the image as image.png (in the png format).

Fig 2:- generated QR code

Step 2:- To create a coloured Quick Response Code, each created code must be coloured with a different RGB colour, thus it is necessary to identify the patterns of each finding. In order to complete this process, MATLAB® uses the geometric features of a square to identify the finding patterns of each QR code encoded. The following is the step 2 pseudocode:

1) read the image.png produced in step 1

2) if the image is in the RGB format, use method 21.

3) create a binary image from an RGB image.

4) end

The regionprops function built into Matlab is used to measure the collection of characteristics for contiguous and discontiguous regions in the binary image after binary conversion. Objects or related components are other names for contiguous regions. The following algorithm is used to measure the characteristics of connected components. Contiguous regions in a label matrix can be expressed as:

110022033

110022033

The first continuous section or linked component belongs to matrix elements with a value of 1, the second connected component to those with a value of 2, and so on. The term "discontiguous regions" refers to areas that may have several related components. An example of a label matrix with discontiguous areas is:

11011022

11011022

The first area, which contains two connected components and is discontiguous, is where the elements of the matrix containing element 1 are located. The second section, which consists of a single connected component, contains elements of the matrix whose value is 2.

When an image is transformed to a binary image, the function "bwlabel" outputs a matrix "L."

There are 4 or 8 related objects in the returned matrix. The same continuous value of pixels in either a pair of four or eight pixels is referred to as a connected object. Integer numbers larger than or equal to zero make up the elements of "L." The pixels with the labels "0" and "1" represent the background, "2" and "3" represent the next object, and so on. BW (binary image) can be actual and two dimensional, logical or numerical. L is of class double.
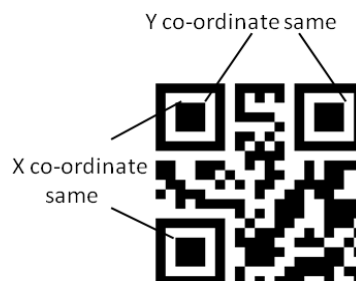
QR Code having same x and y coordinates

Step 3: - In addition to colouring the background of a single finder pattern, one of the RGB colours is also utilised. Three such separate encoded coloured Covert QR codes with distinct colours have been generated. Along with the final images from steps 2 and 3, the associated pseudocode is displayed below for each step.

1) The insertshape function   *This technique replaces pixel values to add various forms to an image. a grayscale or truecolor image input. The formula RGB =insertShape creates a truecolor image with a shape drawn in it (image, shape, and position). The supplied image may either be a truecolor or grayscale image. *\

2) Vertex1 should be red, Vertex2 should be green, and Vertex3 should be blue.

3) R = image(:,:, 1)   * Extract the three picture planes*\

   G = image(:,:, G 2)

   B = image (:, :, 3)

4) State the RGB component values for any white pixels.

5) R(pixelvalue) = 0, B(pixelvalue) = 255 to 255, and G, G(pixelvalue) = 0 to 0 are modified to produce a blue image (newImg). The same procedure is used to produce additional display colours.

6) Save the image as image.png (in the png format).

Step 4:-After merging these three codes in MATLAB, an RGB layered black and white QR code is created that has three times the capacity of a single QR code made out of white and black modules.

Decoding steps:-

Step 1:- Decoding works exactly in the opposite way from encoding. Each code is unlayered by removing the red, green, and blue channel layers one at a time once the finding patterns of the layered QR codes are once again identified.

Step 2:-Every de-layered Covert QR code is decoded using the ZXing route in MATLAB.

VIII. CONCLUSION

Technical developments that can improve the quantity and quality of visitors' encounters with historical sites have increased in recent years. The smart phone has swiftly gained popularity as a tool for travellers and tourists due to its wide availability and powerful processing abilities. The growing user base and wide range of new applications for smartphones are fundamentally altering how we now use and understand the transportation system and travel for tourism. This software helps us to think about how cutting-edge informative tools, like the QR code, might raise our understanding of cultural heritage.

FUTURE ENHANCEMENT

In the proposed system there is scope for improvement. Following are some of the enhancement.

1.   Add the video file information about the heritage place

2.   Add the Google Map to application to know the near heritage spot and the distance from the current heritage spot

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