

# Smart Guide – an approach to the Smart Museum using Android

Mr. Sagar Patil<sup>1</sup>, Ms. Shraddha Limbekar<sup>2</sup>, Ms. Amruta Mane<sup>3</sup>, Ms. Netra Potnis<sup>4</sup>

<sup>1,2,3,4</sup> Bharati Vidyapeeth's College of Engineering, Shivaji University, Kolhapur, Maharashtra, India

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**Abstract** - Smart phones are increasingly being deployed by museums and other cultural spaces to provide guides for visitors, replacing dedicated audio guides. This paper introduces android application that recognizes the article which displays the information by scanning QR code near to the statue either in image, audio, video or in text format. Now a day, museums are available with QR codes to improve visitor's ability to access the information by scanning QR-Code with their own smart phone. The QR code was often positioned near or on the object label. On paper, this approach sounded simple, and many museums jumped on board with a positive outlook about the potential. Online approach for ticket booking for museum reduces paperwork and creates transparent system [3]. While smart phones are well equipped for outdoor as well as indoor tasks. This provides a guidance task in museum. Since smart phones and wireless Internet connection became ubiquitous in the last years, location based interaction, supported via the Global Positioning System (GPS) or Wi-Fi identification became a standard pattern for mobile phone usage. This enabled a variety of context aware applications, which now constitute a considerable part of phone apps, e.g. a dynamic Tourist Guide.

**Key Words:** Android, Smart ticket, QR Code, Museum Guidance Application.

## 1. INTRODUCTION

Museums are more important public spaces in the society. But, the importance of how visitors see internal structure of the museum and determines what visitors will see, where they focus their attention and ultimately what they learn and experience. Museums and other cultural spaces (such as archaeological sites, art galleries, castles, temples, historic churches and so on) are constantly looking for ways to improve visitors' experiences and very interested in the latest technological developments. The ongoing changes deployed by museums have consistently proved that it always driven by spaces, from display technologies to mobile guides with audio, then multimedia tools on different devices as well as introduction of apps for smart phones, and many more increasingly sophisticated developments. [3]

Cultural spaces are beginning to encourage their visitors to use their own smart phones rather than renting dedicated mobile audio or multi media guides. This saves the organization the cost of purchasing and maintaining their own supply of dedicated audio guides, as well as other related costs such as staff and the space required for renting out and returning the guides. Visitors also benefit, they will get

correct information about article in their own language in any format.

Instead of paying with cash, cheque, or credit cards, a consumer can use a mobile phone to pay for ticket of a museum. Mobile tickets reduce the production and distribution costs connected with traditional paper-based ticketing channels and increase customer convenience by providing new and simple ways to purchase tickets.

## 2. Literature Review

An application which records user's personal information when the user downloads this application, keeps track of the user while it is run, recognizes the structure when the user takes a picture of it, displays the picture along with a text showing some useful information about the structure, and plays a video that is closely related to the structure. It also displays a multimedia content relative to the object in the photo when the smart phone user takes a picture of an article on exhibition in a museum and also displays educational contents relevant to the object in the photo when a child in a museum or a park takes a picture with a smart phone. A mobile application that figures out the appropriate key words representing objects in the photo when the user takes a picture of a landmark and retrieves images from open image databases with the key words to display them on the smart phone is introduced. However, none of them plays videos. One of the unique features of our application is that it plays a video which is closely related to the architecture when a user takes a picture of it. In order to make it play a video, we have to install a streaming server. Another unique feature is the way of identifying the architecture in the picture taken by the user. All the existing applications use an image recognition technique to identify objects in a photo. An image analysis process is time consuming. Hence, we are introducing QR code technique to display information about article present in that museum. Visitor will scan the QR code near to the article and get information in any format in any language. [1]

Many modern museum systems are developed under client/server infrastructure to reduce the computation burden of the mobile device. However time consuming resulting from data communications is a main drawback of these systems. In this paper, it describes an AR based museum guide system, which was implemented on an ultra mobile PC equipped with a conventional USB webcam. Visitors only need to take a picture of the exhibits that they are interested, intuitive multimedia information of these exhibits will display on their handheld mobile device's

screen, which includes augmented multi-model, video, audio and photographs. Visitors can interact with the augmented models through the adjustment of one or more visual properties, such as size, color, position and rotation. If more than one exhibit appears in the picture, each of them will be recognized, respectively. It also describes a prototype of a mobile interactive museum guide system, which consists of an ultra mobile with a camera. This museum guidance system can automatically find and retrieve multimedia information about the objects of interest to the visitors in an intuitive way. A course to fine image recognition method is used to improve the recognition rate and a sub-exhibits localization method is proposed to solve the occlusion problem. It also describes image recognition. While image recognitions in the museum environment would have some unique properties, which make the image recognition precede more difficulty. In a crowded museum environment the lighting conditions may be insufficient and the paintings may be occluded by other visitors. Moreover more than one painting might appear in the image when these painting are placed too close to each other. Local feature based image recognition approaches will be more suitable for museum environment. Hence, we feature QR code to every article in the museum. [2]

In most of the systems, the visitor should prepare a ticket and pay for it. The ticket will be checked, and then visiting will be started. At this stage, the visitor needs to be guided in order to find desired things' location. After getting to the desired object, he/she should get the information about it. After a while, the visitor will exit from the environment, but he/she may write his/her views and opinions on survey paper before exit. Any entry and exit should be in control of the manager, he/she should make sure about right maintenance of objects. Manager wants to know how is the quality of services to the visitors, and get aware form their opinions at the end of visit. The manager also needs the statistics of visitors within periods of time for future planning, especially financial planning. This solution includes hardware infrastructures and organizing its processes to increase accuracy, speed, and quality of the tasks, and the environment become human less as possible. [3]

Currently, museums are using digital technology display devices and their associated hardware enable museums to provide a visitor a free choice of learning environment where users are given various ways to explore museum exhibitions that suit visitor preferences. In addition, the use of such technology is believed to improve the museum landscapes by enabling self-directed exploration and discovery in contrast to the more traditional approaches which follow what have been asked and given to the visitors. New technologies such as mobile and smart phones are important tools that are able to promote unparalleled opportunities for learning in cultural spaces. Through audio and multimedia tours, multimedia presentations and video guided tours, they can be seen to have enhanced their role as providers of free choice learning. Such forms provide information using such technologies that make the museum

one of the more accessible and more attractive places to spend time at. [4]

### 3. Proposed System

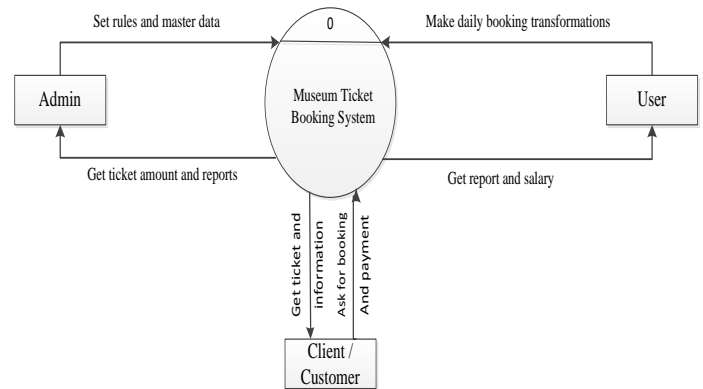


Figure 1. DFD for Android Based Automation of Museum.

Figure 1 shows the overall structure of the proposed system architecture. It is composed, as described below, of five main building blocks:

First the application is first downloaded by a client, it is distributed between the wearable devices. The application takes the client's personal information and the localization information is stored and made available to other services. The information is also used locally and saves it in the database.

An online ticket reduces the costs as compared to paper based system and increases convenience by providing simple ways to purchase ticket. After registering the client's information, he will get ticket information such as ticket number, price and its type as a student, child or adult and its respective cost of ticket. After getting ticket information, client will book the ticket according to his criteria.

After ticket booking, client will get entry for museum. Museums use QR codes to offer a multi-media experience for their visitors. An existing display board present in the organization can display so much or less information only in one form. But a QR code can hold even more video, data, pictures, audio or combination of presentation media. The space necessary for the QR code is very small. And because the museum does not need to invest, maintain or upgrade any of the equipment like video screens or speakers for the visitors, using the QR codes can be able to enjoy the additional presentational information. The cost of implementing QR Codes for museum is extremely favorable, particularly as many brick-and-mortar museums are organized as not-for-profit organizations. When the client wants the information about the statue then he will scan the QR code and will get related information about that particular statue in text, image and audio or in video format. And also client will choose his language he wishes to see the information as in English, Hindi or Marathi.

Figure 2. Ticket define form.

The Online Ticket Booking has been developed to override the problems prevailing in the practicing manual system. This is supported to eliminate & in some cases reduce the hardships faced by this existing system. Moreover this system is designed for the need of the organization to carry out task in an effective and error free manner while entering data.

This application is reduced as much as possible to avoid errors while entering the data from admin. It also provide error message while entering invalid data. No formal knowledge is needed for the admin to use this system. Thus by this all it proves it is user friendly. It can lead to error free, secure, reliable and fast management system. It can assist the user to concentrate on their other activities rather to concentrate on the record keeping. Thus it will help organization in better usage of resources.

While booking ticket for the customer, there will be different types of ticket such as for children, adult, senior citizen etc. There will be also a requirement to apply some discount for the school trip coming in the museum to visit. So there will be different form to add this information and also its type. Once record is inserted in ticket type and class it will be further carried out to calculate ticket amount. In ticket form, after selecting ticket type and class, admin will add its amount, tax, discount if needed to particular ticket. And if there are multiple tickets it will be calculated in sales form by selecting ticket and entering quantity. Because of select option, it will reduce errors while entering amount, words etc.

#### 4. CONCLUSION

The 'Smart Guide' has been developed to override the problems prevailing in the practicing manual systems. This system is support to eliminate and reduce the hardships faced by existing system. Moreover this system is designed for the particular need of Museum to carry out operations in a smooth and effective manner. This application is reduces errors while entering data. It is user friendly system.

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