IoT-On Demand based Location Aware System for Smart Museum

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***Abstract*— In Existing system, today, museums and art galleries usually provide visitors either with paper booklets or with audio guides. Visits at museums are often considered boring. It is hard for museum's curators to catch the attention of tourists. In particular, it is difficult to define in advance a tour for all the visitors, because interests may vary from person to person. To overcome all these a Cloud environment is maintained by the admin to store the details of the art work, a wearable device given to the user which acts as the camera, BLE is used to obtain the location of the user, camera sends the specific frames to the processing center and checks for the frame if the frame is been matched then the cloud content (audio, video, text) is been retrieved and sent to the user mobile phone.**

***Keywords*— Wearable device, Processing Center, BLE, Cloud Introduction**

I. INTRODUCTION

The main aim of this project an IOT enabling technologies to create a smart environment system based an indoor location-aware architecture able to enhance the user experience in a museum. In an IOT based on smart museum environment that system relies on a wearable device that interacting with an IoT-based smart environment, to act as museum guides combines image recognition and localization capabilities to automatically provide the users with cultural contents Related to the observed art works. In this wearable device to capture the artwork to provide cloud processing centre and then localization information is obtained by a Bluetooth low energy (BLE) infrastructure installed in the museum. Moreover, the system interacts with the Cloud to store multimedia contents produced by the user and to share environment-generated events on his/her social networks. Finally, several location-aware services, running in the system, control the environment status also according to users' movements. We can get easy to received arts profile and history using mobile device

II. PRELIMINARY

A. Updating Cloud Contents

In this module, the museum administrator has login credentials and they can update the art works for each rooms based on the Bluetooth low energy type. First we start a new room with assigning new BLE Id in a particular art works. And then we create a next room to added a same way. Each and every room have many number of artwork included based on administrator .And then classify for room names like (Historical room, Technical rooms). And also they can update the multimedia content for each artworks with particular room based on BLE id. And then for each art works they can upload the video, audio and the textual information and then content will be uploaded in a cloud.

B. Uploading Media with Localization service

In this Module, We are uploading media content .And we can update the multimedia content for each artworks with particular room based on BLE id. And then for each art works they can upload the video, audio and the textual information and then content will be uploaded in a cloud. In this multimedia based artwork content the video, audio, text files have n number of sizes not a fixed sized .In this media uploading way to store the room name and then BLE id .

C. Background subtraction algorithm

It is distributed between the wearable device and the processing centre. The first we can detects the current user's position and communicates it to the processing centre. In a user mobile device to pairing with the particular room BLE to aware the android device. Here, the localization information is stored and made available to other services. The information is also used locally (on the wearable device) to speed up the image-processing algorithm. . It can quickly analyse the video frames captured by the wearable vision device and identify the target object with high accuracy and reliability. We are using background subtraction algorithm to capture the art to analysis and then get the result to particular user to frame by frame and then algorithm get a artwork frame to proceed the result. The result of the processing activity is then sent to the processing centre.

D. Artwork content Delivery

In this Module, It is the core of the business logic. It accesses, in the Cloud get an image from artwork and then comparing to particular art and then cultural contents required by the users and smartly provide such contents on several interactive platforms. Then, it allows the execution of several location-aware services by providing them with the positioning information coming from the localization infrastructure. These services enrich the cultural experience of the users by immersing them in a real interactive. To get a artwork Documents like that audio, video, text, author name to proceed given user mobile device .User can see the given artwork media content.

III. SYSTEM IMPLEMENTATION

A. Existing system

In Existing to catch the attention of tourists. In particular, it is difficult to define in advance system, museums are usually providing visitors either with paper booklets or with audio guides. Visits at museums are often considered boring. It is hard for museum's curators a tour for all the visitors, because interests may vary from person to person.

B. Proposed system

The overall structure of the proposed system architecture Localization service is distributed between the wearable device and the processing centre. The first one detects the current user's position and communicates it to the processing centre. Here, the localization information is stored and made available to other services. The information is also used locally on the wearable device to speed up the image-processing algorithm.

Background subtraction algorithm is able to detect, in real time, the artwork observed by the user. It can quickly analyse the video frames captured by the wearable vision device and identify the target object with high accuracy and reliability. The result of the processing activity is then sent to the processing centre. Processing centre is the core of the business logic. It accesses, in the Cloud, the cultural contents required by the users and smartly provides such contents on several interactive platforms. Then, it allows the execution of several location-aware services by providing them with the positioning information coming from the localization infrastructure. These services enrich the cultural experience of the users by immersing them in a real interactive

IV. SYSTEM FEATURES

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Image-processing algorithm is able to detect, in real time, the artwork observed by the user. It can quickly analyse the video frames captured by the wearable vision device and identify the target object with high accuracy and reliability. The result of the processing activity is then sent to the processing centre. Processing centre is the core of the business logic. It accesses, in the Cloud, the cultural contents required by the users and smartly provides such contents on several interactive platforms. Then, it allows the execution of several location-aware services by providing them with the positioning information coming from the localization infrastructure. These services enrich the cultural experience of the users by immersing them in a real interactive.

V. SYSTEM DESIGN

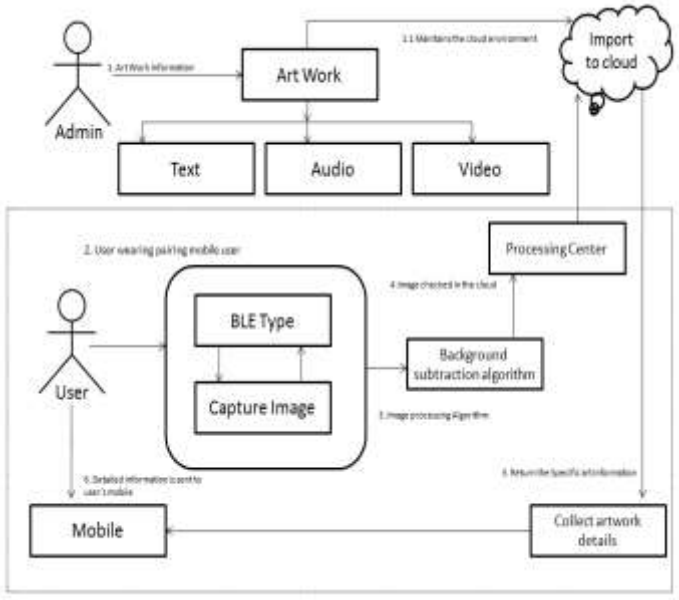

Fig.1 Architecture Diagram

System design deals with planning and designing of the system. It mainly deals with the overall flow of operations in the proposed system.

VI. LITERATURE SURVEY

Thinagaran Perumal, "IoT Device Management Framework for Smart Home Scenarios", proposed [8] the paradigm of the IoT requires pervasive connectivity to billions of heterogeneous devices. In recent time, rapid growth of IoT devices in smart home environment envisioned a wide range of novel services and applications. However, due to the inherent heterogeneity, home environment is becoming complex making device management extremely difficult. This paper proposes a lightweight IoT device management framework for smart home services. The framework can be deployed at home gateways and consumer smart devices. A prototype implementation and performance evaluation results are also presented.

David G. Lowe, "Object Recognition from Local Scale-Invariant Features", proposed [1] an object recognition system has been developed that uses a new class of local image features. The features are invariant to image scaling, translation, and rotation, and partially invariant to illumination changes and affine or 3D projection. These features share similar properties with neurons in inferior temporal cortex that are used for object recognition in primate vision. Features are efficiently detected through a staged filtering approach that identifies stable points in scale space. Image keys are created that allow for local geometric deformations by representing blurred image gradients in multiple orientation planes and at multiple scales. The keys are used as input to a nearest-neighbour indexing method that identifies candidate object

matches. Final verification of each match is achieved by finding a low-residual least-squares solution for the unknown model parameters. Experimental results show that robust object recognition can be achieved in cluttered partially-occluded images with a computation time of fewer than 2 seconds.

YounSun Cho, Lichun Bao and Michael T. Goodrich," A Location-Aware Access Control Protocol", Proposed [9] with the proliferation of wireless communication technologies and mobile computing devices, research interest has grown for location-aware systems and services. We propose LAAC, a novel Location-Aware Access Control protocol based on a coarsely defined location area that is enclosed by overlapping areas of multiple access points. Accordingly, a location key for location claim is derived from the overlapping access points' beacon information. In addition, the fact that a mobile device derives the location key enables us to track the location of the mobile device. LAAC does not require additional hardware's such as GPS or ultrasonic devices in order to localize the mobile devices. We enumerate possible attacks to the system and analyse their countermeasures. The computational and communicational costs and the memory requirement are evaluated, and the simulation results are presented.

VII. CONCLUSION

In this project, we have proposed an approach for bringing out the automation in the Museum and increase the number of visitors in the museum. Our approach is efficient and caters to the entire society. The process also ensures a simpler method and gives the user an excellent experience and acquires all of the art knowledge. The proposed system were tested in 10 different rooms for 10 different images, the six image contents were delivered but when tested for the existing system three out of ten image content was delivered and the server was overloaded and stopped its further processing.

The performance evaluation was done with 4 different images in different rooms. Here x-axis represents the images in frames and the y-axis represents performance in seconds' attempts for 4 samples of image. In the proposed system, there is more number of successes than failures in the part of retrieving the information and the processing centre is not overloaded with much number of frames as the existing system was overloaded.

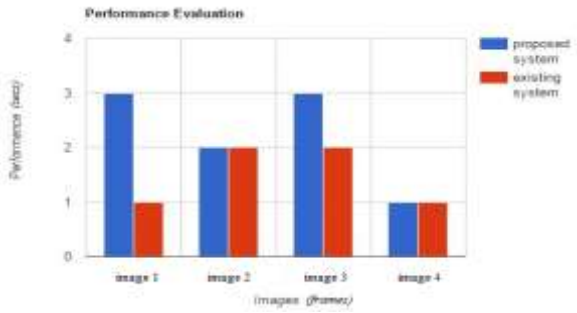

Fig.2 The bar graph represents the performance

VIII. FUTURE ENHANCEMENT

Instead of using the wired devices the wifi enabled service can be provided moreover the pinhole cameras can be used and make the circuit even more reliable, this project works till the android version 5.0-5.1.1 Lollipop which can be upgraded to the higher versions. The IoT application can be developed for Macintosh operating system. The proposed system can be modified with few changes in order to support automation in shopping malls and super markets.

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