

An Indoor Location System for an IOT based Smart College

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Abstract: The new technologies characterizing the internet of Things permit realizing real sensible environments ready to offer advanced services to the users. Recently, these sensible environments also are being exploited to renovate the users' interest on the cultural heritage, by guaranteeing real interactive cultural experiences. During this paper, we have a tendency to style and validate an inside location-aware design ready to enhance the user expertise during adiposity. Above all, the projected system depends on a wearable device that mixes place recognition and Localization capabilities to mechanically offer the users with cultural contents associated with the determined artworks. The localization data is obtained by a Bluetooth infrastructure put in within the College. Moreover, the system interacts with the Cloud to store multimedia system contents created by the user and to share environment-generated events on his/her social networks.

Keywords: Bluetooth, Place recognition, IoT, Tracking system, Location-awareness, SoA, Smart College.

I. INTRODUCTION

The purpose of the College project was to enhance access to the College details and to upgrade internal info by making joint databases. Ideally, the information systems would manage all reference info referring to the college internal and external content. During this means, the college internal necessities for management, research, field work, education and communication would be coated. It had been additionally requested that the systems ought to suits the external demands of the authorities and society relating to open access to info concerning our common cultural and natural heritage. The bulk of the reference info within the colleges existed on paper. Visual impairment is a qualitative term that describes the college condition whereby individuals have no light perception as a result of total vision loss. Visual impairment also refers to those who have so little vision that they have to rely predominantly on other senses as vision substitution skills. On the other hand, visual impairments is a qualitative term used when the condition of vision loss is characterized by a loss of visual functions at the organ level, such as the loss of visual acuity or the loss of visual field. In the present society utilizing an advanced mobile phone is ordinary. This project presents a prototype model and a system concept to provide an IoT for Smart College. This system is intended to provide overall measures object detection, human detection, and real-time Assistance system consist of microcontroller, ultrasonic sensor and a smart phone (GSM Module) and vibratory circuit. This project aims at the development of an IoT College kit to help the people to guide path. This project presents a prototype model and a system concept to provide an IoT College for visual impairment people. This system is intended to provide overall measures object detection, and send information related to college.

II. LITERATURE SURVEY

Smart management systems infer user locations through wireless detector networks, active and passive RFIDs, NFCs etc., to call some. This involves considerable quantity of installation and detector information managing. We have a tendency to gift a personalised sensible system that learns user location and controls appliances gift at the user's location. The sole detector we have a tendency to use is that the smart phone itself through its embedded field of force and light-weight sensors for classifying user locations and sleuthing intensity level in rooms severally.[1]

Smart-home may be a terribly helpful application in IoT to manage electronic devices and electrical appliances uniformly in residence. Even there square measure some approaches to avoid wasting energy in sensible homes, there's an absence of effective solutions for saving energy by ever-changing users' habit. Thus we have a tendency to propose a system for up the approach to life habit to avoid wasting the energy during this paper. This technique lets users United Nations agency board the smart-home bear in mind of their life vogue, wasted electricity, so improves their modus Vivendi. The system initial detects varied data, e.g., position of the user, and energy-usage of home electrical appliances. And then, the system acknowledges state of affairs of wasting energy and supply services to enhance the approach to life of users.[2]

Recent innovations within the ICT field square measure powerfully targeted towards the net of Things, which is able to undoubtedly cause Associate in nursing sweetening additionally within the domestic environments. Low-power and cheap devices square measure expected to form a network of interconnected sensible objects ready to remodel our homes into real sensible Homes. However, the no uniformity of the underlying technologies prevents these sensible objects to natively interoperate for adapting the atmosphere to users' wants. additionally, common users square measure typically excluded from the event of latest applicable services that exploit physical devices, as they are doing not have sufficient programming and technological skills.[3]

Emergency Based Remote Collateral Tracking System' application using Google's Android Mobile Platform is addressed. Emergency is divided into three categories: heart beat based emergency, security threats like personal safety and road accidents. This application is targeted to a person who is driving a vehicle. Heart rate monitoring device is integrated with our application to sense the heartbeat of a person driving the vehicle and if there is any abnormalities in the heart beat, then our application performs a dual role. One in which, application uses a GPS to track the location information of the user and send those location information as a message via SMS, email and post it on Facebook wall Simultaneously, an emergency signal is sent to Arduino Microcontroller.[4]

"Motion sensing" has now become one of the crucial parts of modern life. The tech products for entertainment create huge competition in the modern market, with the front runners such as PS3, Wii, and Xbox. Body movement games are a favorite among gamers. However most of the body movement is restricted to the hand portion for the handheld platform, making it not as dynamic as the traditional television consoles. Thus, this restriction decreases the multitude and availability of entertainment in handheld devices. For this reason, this research presented a ubiquitous motion sensing service with Smart Shoe as a body movement controller for handheld devices, and designs a Step Direction algorithm to determine the direction and motion state of feet during exercising. Using wireless transmission to transmit messages to handheld smart phone applications, a body movement rhythmic dance game is presented for this device, which receives the feet stepping signal as input for the game. It also provides a health exercise service, using the motion state to calculate burnt calories. The user can also observe their health state at any time, letting users to enjoy ubiquitous multifunctional entertainment anywhere outdoors.[5]

III.SYSTEM ARCHITECTURE

Over the centuries, many colleges and art galleries have preserved our various cultural heritages and served as necessary sources of education and learning. Particularly, it's tough to outline earlier a tour for all the visitors, as a result of interests could vary from person to person. Therefore, interactive and personalised repository tours ought to be developed. Finally, many location-aware services, running within the system, management the atmosphere standing additionally in line with users' movements. These services act with physical devices through a multi-protocol middleware. The system has been designed to be simply extensible to alternative IoT technologies and its effectiveness. The effectiveness of the planned design is evaluated in 2 sequential phases. First, the performance of each the image recognition rule and therefore the localization service is analysed through specific stressing tests, whereas the full design is evaluated in an exceedingly real situation staged at college.

IV.SYSTEM ANALYSIS

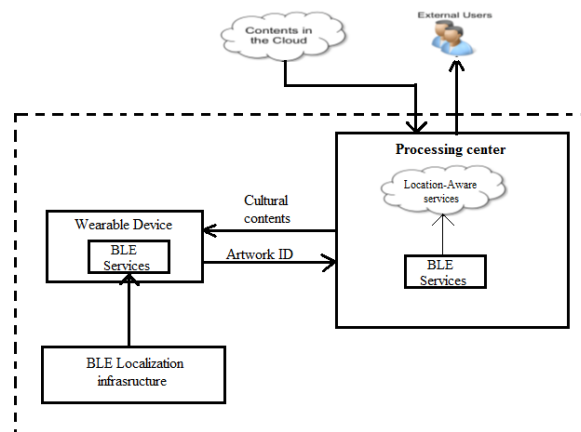


Fig. 1 shows the overall structure of the proposed system architecture. It is composed, as described below, of two main building blocks:

- **The localization service:**

Here, the localization info is kept and created accessible to different services.

- **The processing centre:**

It is the core of the business logic. It accesses, within the Cloud, the cultural contents needed by the users and well provides such contents on many interactive platforms. Then, it permits the execution of many location-aware services by providing them with the positioning data returning from the localization infrastructure.

- **Indoor localization:**

As said, many system parts depend upon the localization service. It consists of 3 main elements: (i) Associate in infrastructure of wireless landmarks that sporadically send localization info, (ii) a service put in on the wearable good entrance of college data, and (iii) the service running on the process center that receives the situation of the user and provides it to the opposite services. Mores pacifically, the network of wireless landmarks consists of embedded devices equipped with Bluetooth Low Energy(BLE) interface and placed separately within the completely different rooms of the building. The selection of BLE is principally attributable to its low energy consumption before of a communication vary comparable with that of the standard Bluetooth. Each device of the BLE infrastructure sends its location identification (ID) along with the transmission (TX) power value. The service running on the user's wearable device collects location knowledge from all the landmarks at intervals its listening vary and so determines the area during which it's located.

The interpretation of the design symbol will result in 2 potential results:

1. Associate audio description of the design on the user's wearable device;
2. Multimedia cultural contents on interactive walls of the college

V. CONCLUSION

In this work, an interior location-aware design for smart college was designed and valid. In additional detail, the projected system depends on a wearable device equipped with place recognition and localization capabilities to mechanically offer users with cultural contents associated with the determined college. The power to spot the user's position is secure by associate degree infrastructure of Bluetooth Low Energy transmitters. The design additionally consists of a process centre, wherever the particular business logic is responsible to (i) retrieve from the Cloud the college info associated with the determined college and (ii) manage the standing of the indoor surroundings in accordance to users' position.

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