An Automated Book Finder In Library Using iBeacon

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ABSTRACT----Role of mobile devices and their users provides a great amount of added value and opportunities. The penetration of tracking devices with sensory such as GPS devices, accelerators and specifically smart phones has impacted human lives extensively. Nowadays, many applications on smart phones and mobile devices exploit different techniques and inputs for positioning. Wireless positioning is generally divided into two categories: outdoor positioning and indoor positioning, depending on not only where they are used but also how they work. Powerful as it is, indoor positing is still a challenging problem because satellite-based approaches do not work properly inside buildings. Therefore, for indoor positioning, It is required to use other technologies creatively. iBeacon, the focus of this work, is a new technology which provides a higher level of location awareness in indoor positioning. iBeacon is a built-in, cross- platform technology for Android and iOS devices, which utilizes Bluetooth Low Energy (BLE) for long-last services. This technology has significant advantages compared to other types of indoor positioning technologies, such as less expensive hardware, less energy consumption, needless to internet connection, and being capable of receiving notifications in background. This technology will provide huge benefits for future location awareness applications. In this work, we aim to provide a more accurate, cost efficient approach to indoor positioning of mobile devices using iBeacon. The main purpose of this application is to help the user to easily track the required book and reduce the Search time of finding a book in the library .Keywords : Library, ibeacon ,Android application, books, users etc

1. INTRODUCTION

In early stages of the library system, people didn't face the big problems to search a particular book as they were having small libraries and less number of books. As number of books and size of library increased they started facing problems. As a solution to this problem, librarian used to assist the people to track the book. This technique got failed because to assist every member coming to the library was not an easy job for the librarian. After that, books were used to arrange in alphabetical order in the library so that one can easily find the book. But this method was a time consuming. So it was dropped in standard libraries.

2. LITERATURE SURVEY

Umar Farooq, In 2009 they worked on "Automatic Book placement and searching technique for performance enhancement of library management system". The placement of book inside the shelf according to assigned code to facilitate manual searching. This system uses a web camera to capture the title page of the book the image capture the title page of the book are processed and passed to the database for getting the reference number. Control commands for Cartesian robot are generated to place the book inside shelf. Book searching is carried out by mobile phone software developed using NetBeans IDE Integrated with java Wireless ToolKit. [1].

Mohammad Hanif Gharath, Anvitha Knai, in 2010 worked on Shaping the Afghan "Learning Settings and Power to the Learners through a High-Tech Library Management System".This study proposes a high-tech library management system namely "e-Ketabtoon". It aims to improve the overall working of a library, digitalize and preserve Afghan valuable knowledge and cultural heritage for the next generation, and promote digital literacy among Afghan masses. Here they used digital literacy, digital library, client and server sides technologies, hash algorithm, agile method. This study proposes high-tech library management system namely "e-Ketabtoon" to highlight the current situation of libraries. The current paper-based system is inefficient and very slow in service delivery. People issue the books and they do not return it and if they return it either the inner pages are damaged or torn apart[2].

Subhadeep Bhattacharya, in 2014 worked on "Blue-Droid: An Intelligent Library Management System on Android Platform". They have implemented this software on Android platform which has the advantage of portability and wide availability. They used Bluetooth as communication medium between the server and the client. BLM has additional capabilities (call, SMS, email) for communication between library card holder and the administration. An encryption algorithm is used to enhance the security of that software. The decryption algorithm is used in the server side to decrypt the cipher-text.

Technology used Android, Python, SL4A, Bluetooth, SQLite, Library Management System Bluetooth. Disadvantages are Performance of this software can be increased by adding additional capabilities and performance testing[3].

Nithya M,Solaiyammal K, in 2016 worked on "RFID Based Intelligent Book Finder Using Ultra High Frequency Sensor". Locating items rapidly and accurately has become a difficult in modern library. One promising indoor tracking method is provided by radio-frequency identification technology. Where in this technology RFID tags are attached to various objects and are used in different environments. RFID, speeds up in book borrowing ,monitoring ,books searching processes, RFID reduces staff to do more user service task, Helps in saving labour costs ,Lower book thefts, but this work restricts All the library operations are processed and implemented using software .hence, if software fails all operations becomes failed.[4]

Xiao Yang, Dafang He,Wenyi Huang, Alexander Ororbia Zihan Zhou, Daniel Kifer, C. Lee Giles, In 2017 worked on "Smart library: Identifying books on library shelves using Supervised Deep learning for scene text reading". However managing and finding book in a large collection of bookshelves is very risky job and it is very tedious work ,when books are misplaced. Recently, Deep neural based models have been successful in detecting and recognizing text in images taken from natural scenes. Based on this, They investigate Deep learning for facilitating book management. In this work Deep Neural network based system combined with image processing are used. this work restricts its Performance on the whole system demonstrates only from text-based retrieval [5].

Sahana Karanth, Jenishiya Castelino, Nireeksha,Frencita Nazare, in 2017,worked on "An Advanced Library Management System Using Android Device". Android platform is gaining popularity and holds more user than other platforms. But evolution of the computers, smart phones and internet have made the work much easier. LIBKART application helps the users to access their required book and queries without the help of librarians which saves time. This work provide an efficient access over library system using a Smartphone application named as LIBKART. This technology we can save the time of user. but this work restricts The detail of books can be updated through manually work, This application can be used only by the Android device[6].

Urvesh Katode,Prathamesh Mandavkar, Jai Kudu,Sayali Lad, worked on "Wireless Pick and Place Library Management Robot".A Library Management robot is device to help any libraries which are still using the old way to manage their library. The old way like searching for a book using manual work is hassle, fast report generation is not possible, information about issue/return of the books are not properly maintained, as information about the issued book is not available so database cannot be created . But by using this, user can overcome all the problems mentioned above .Here line follower robot ,pc control,wireless-cc2500,Pick books from different pre-defined location and place it on common (pre-defined) location ,Single (active) RFID Tx - for book identity ,Database on PC side – VB,8051 Controller and DC motor these features are used [7].

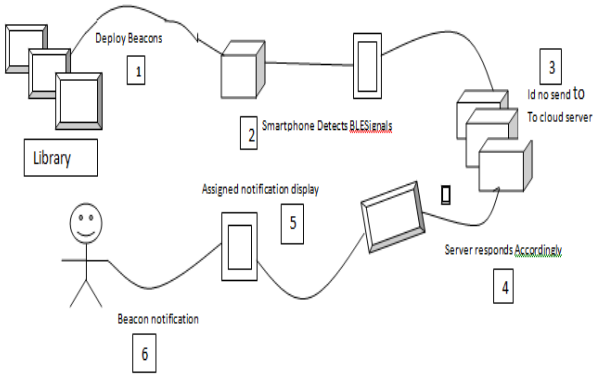

Fig 1: Architecture Of Library System

3.PROPOSED SYSTEM

In the above fig 1, user can easily search for the book in the library. A beacon will be implemented which allows the user to get to know the details of the required book. The librarian needs to add the details of the books, location of a book in the system and a map of the book along with its status of whether it is currently available or issued to someone else. All this data is stored on the server.

4.CONCLUSION

As the technologies used in earlier for finding or searching the books arises some of the problems in searching books the beacon technology can helps in searching the books in short time with the mobile devices and smart phones and can look the required books without even touching the racks.

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