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SMART CAMPUS NAVIGATION SYSTEM

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Abstract: In this digital era, the life of human beings is getting simpler as almost everything is being automated, replacing the old manual systems. Nowadays the internet has become an integral part of human's everyday life without which they are helpless. In this paper the project discusses smart campus model using IoT technology and its purpose is to achieve intelligent management and service on campus. After analyzing various research studies, this project is designed to make an IoT based smart campus model which incorporates campus-oriented application services. The outdoor location can be tracked using digital electronic maps. These maps are used for outdoor environments. There is no well-organized technology to search the internal location. Many smart-phones are used to track the location by electronic map. The electronic maps may be the Google map, GPS navigation and offline GPS maps using the android Software Development Kit (SDK). Indoor based location tracking systems can be implemented. It provides an API (Application Programming Interface) for developers to create applications for inside building navigation. This application is useful for people visiting the institute for the first time, vision impaired people by giving voice messages for searched locations and any outside worker. The approach on designing a graphical user interface for pedestrian use on mobile devices is described. This application enables the user to find paths to specific locations on campus and offers him the ability to explore the campus environment.

Index Terms – Indoor Navigation, IoT, API, Campus Navigation, Microcontroller, Servo motor, RFID.

I. INTRODUCTION

Navigation is a technique which basically focuses on the process of monitoring and controlling the movement of a person or vehicle or craft from one place to another e.g.: Land navigation, Marine Navigation, Aeronautic Navigation etc. The campus navigator is a mobile application which is basically used for navigating routes inside any campus premises e.g.: Mall, College, Hospital etc... Mobile phones are nowadays far more than merely devices to communicate with. Smartphones, which are products that help to make our work and everyday life easier. Along with the advance in technology and popularity of these devices, the use of mobile applications has increased enormously in the last few years. Based on new techniques like GPS, sensors, compass and accelerometer, that can be used to determine the orientation of the device, location-based applications coupled with augmented reality views are also possible. Location-based services denote services provided to mobile users according to their geographic locations. Such services use the ability to dynamically determine and transmit the location of persons within a mobile network by means of their terminals (Virrantaus et al, 2001). These Services include capabilities to search for information about physical location, and have features that support finding routes to specified destinations. This work presents a web-based location guidance system that assists visitors and new students to locate their destinations on the campus. Many GPS aided applications have always had to develop a prototype map for the navigation app but in recent days since the implementation of the Google Map API and other API's just like it the development of such apps couldn't be more convenient. These maps do not require any equipment to be mounted on the campus to capture the landscape of the campus

II. OBJECTIVE

The aim of this project is to develop a system that incorporates mobile application, which provides the capabilities to show the current location of a user and also enable the user to easily navigate the campus, this application will also possess the ability to augment reality displaying 3D image of buildings and showing hybrid road map for easier recognition of locations. Provide a useful, informative, mobile based solution for campus navigation inside which will contain all the necessary details, in order to ensure easy, accurate navigation and identification of various buildings, departments and help the students (especially new) and visitors to reach their desired locations without any inconvenience.

III. LITERATURE SURVEY:

College campus can be very large. Every year lot of new students and visitors come to college. There are no such effective facilities to find new places like administrative building, departments, library, canteen, etc. in the campus and how to reach there from current location. Nowadays most of the student, faculty and staff use very popular Android phone for personal use. A GPS based application with interactive markers can be helpful to navigate around college with online and Offline navigation facilities.[1]. College campus navigation system, Jan 2012, Sangam Kumar, Purushotam Kumar, Venketesh R.V, Archana Naik. In this paper, the authors have explained how they used google API, internet, cloud database, to provide a route to the destination from source. University Campus may be very large it may have many campuses. Every year lots new student gets admitted in the university. Many new buildings are built, new courses are started and some department, canteen, library, etc. in the campus and how to find those places from current location [2] Implementing indoor location tracking system, May 2016, Neelakandhan, Muthukumaran, Annamalai In this paper, the authors have created an application which will guide the person to their destination. They have used PHP on server side. Digital electronic maps are used to track the location in outdoor and indoor environment. Most of electronic maps are useful for outdoor environment. There is no efficiency technology for search the indoor location. Many smart-phones are used to track the location by electronic map. The electronic maps may be the Google map, GPS navigation, wage and offline GPS maps. These are only useful for outdoor environment. Indoor based location tracking system can be implemented by using the Indoor Atlas Android SDK. It provides an API for developers to create application for inside building navigation.[3] Campus navigation on an android platform. April 2016 Yogesh Bhangale, Ashutosh Shewale In this paper, the authors have created an application which gives the person a route to where the person wants to go. It also gives them a live notification of any live events going on in the campus. The outdoor location can be tracked using digital electronic maps. These maps are used for outdoor environment. There is no well-organized technology to search the internal location. Many smart-phones are used to track the location by electronic map. The electronic maps may be the Google map, GPS navigation and offline GPS maps. Using the android SDK Indoor based location tracking system can be implemented. It provides an API for developers to create application for inside building navigation.[4] CAMPUS NAVIGATION BASED ON IOT, Vaishnavi.P, Sandhya.H , Shalini., Roopashree.R , Mr. Bharath.J, May 2017

3.3 Theoretical framework:

Figure number 1 is the block diagram of proposed system for campus navigation system which consist of following blocks using RFID card user data can be read and according it will be matched with original data then if it matched using servo motor.

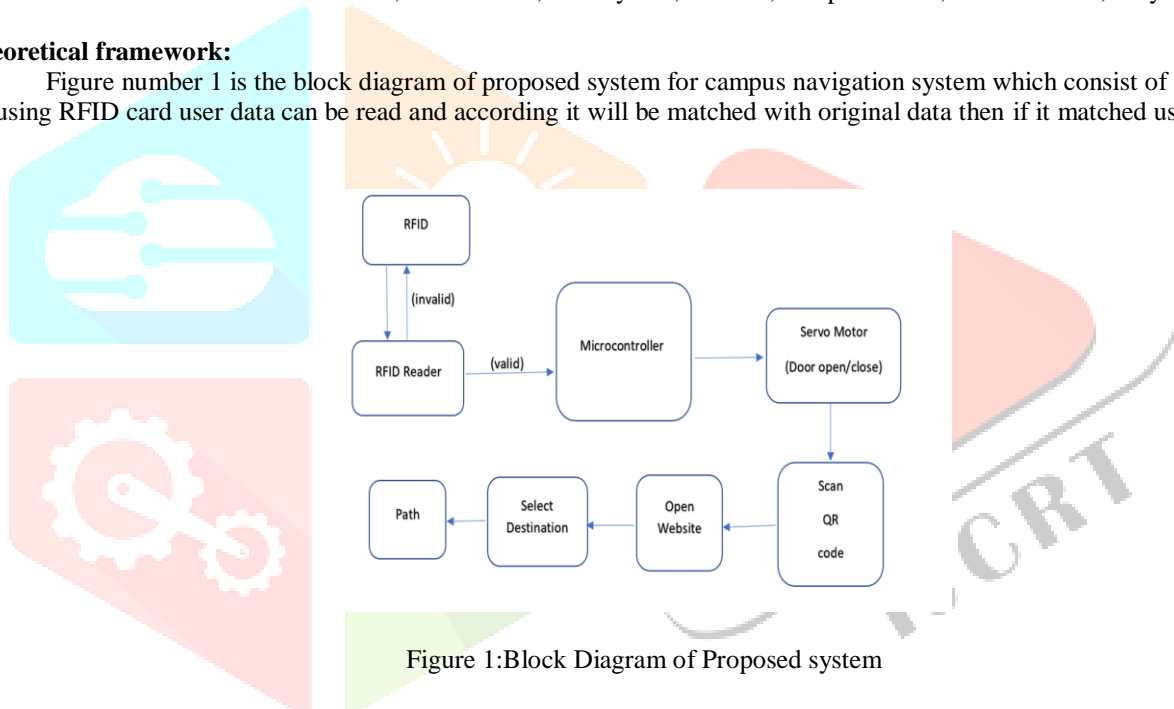


Figure 1:Block Diagram of Proposed system

will open the door.

Campus navigation system in this user will scan the QR code of destination where user want to reach then website will guide the user to reached to destination.

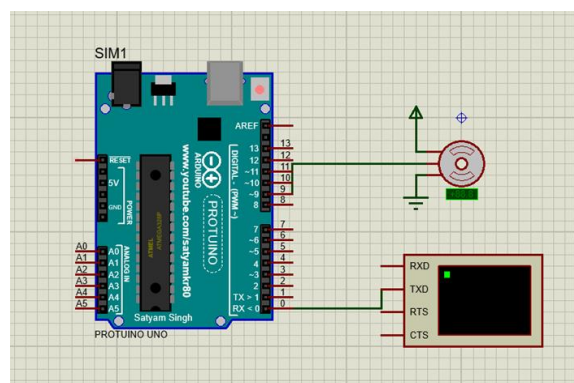


Fig.2. Circuit Diagram

IV. RESULTS AND DISCUSSION:

The door lock system here is designed by using Arduino UNO, Servo motor, Breadboard, Jumping wires, RF ID Sensor.

RF ID sensor will take the input from the user and that will be verified by the Arduino Uno.

If the entered ID is valid then microcontroller will send the output to the servo motor, and it will rotate 180

If the entered ID is invalid then the motor will not rotate indicating that the input provided is invalid.



Fig.3. Picture of a large campus

This system will provide a precise path through a campus or any institute which will help anyone who is not familiar with the campus premises to navigate without any problem. These kinds of Systems are required in the university campus as the area is very large and the number of rooms are also large. This system uses NodeMcu, cloud, and Blynk app to design this system using references.

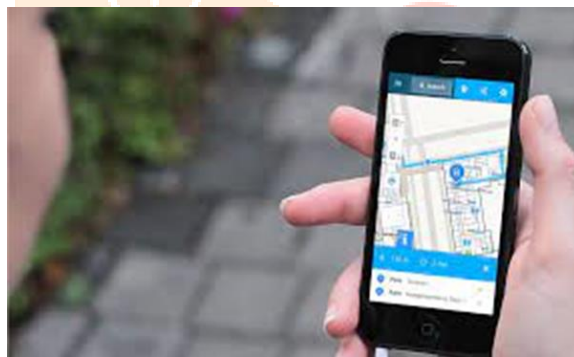


Fig.4. Map route on mobile

IV. ACKNOWLEDGMENT:

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