



BLUETOOTH BASED AUTOMATIC CAR GARAGE OPENING SYSTEM

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Abstract - The improvement of innovation is progressively exceptional and gives a great deal of comfort in the utilization of gadgets or instruments identified with human requirements. Considering this, the creator made an entryway regulator utilizing a Bluetooth signal from an. Android versatile and a carport entryway regulator utilizing an Arduino-based metal finder. This examination depicts clients are not needed to get off the vehicle to open the entryway and carport, on the grounds that through a Bluetooth signal from an Android telephone, clients can open and close the carport door naturally and through discovery of metal sensors, the carport entryway can be opened and shut consequently without troubling individuals to open the carport. Bluetooth Classic (BT) remains the true network innovation in vehicle sound systems, remote headsets, workstations, and a plenty of wearables, particularly for applications that require high information rates, for example, sound streaming, voice calling, typing, and so on Dissimilar to in Bluetooth Low Energy (BLE) ,: The nonstop worldwide expansion in the quantity of vehicles has prompted an expansion in leaving issues, especially concerning the quest for accessible parking spots and discovering vehicles. In this paper, we propose a route framework for vehicle proprietors to discover their vehicles in indoor parking structures. The proposed framework includes a vehicle looking through portable application and a situating helping subsystem. The application guides vehicle proprietors to their vehicles dependent on a "turn-by-turn" route methodology and can address the client's going direction. The subsystem utilizes reference point innovation for indoor situating, supporting self-direction. of the vehicle looking through portable application. This investigation likewise planned a nearby facilitate framework to help the distinguishing proof of the areas of parking spots and guide gadgets. We utilized Android as the stage to actualize the proposed vehicle looking through versatile application and utilized Byte real HI Beacon gadgets to execute the proposed situating helping subsystem. We likewise conveyed the framework in a parking garage in our grounds for testing. The test results checked that the proposed framework functions admirably, yet in addition gives the vehicle proprietor the right course direction data.

I. INTRODUCTION

Continually keeping the carport entryway opener far off with yourself and changing its batteries is an undertaking on the off chance that you love programmed vehicle carport vehicle entryways. Keeping the carport entryway opener distant and continually utilizing it gives time misuse of work. at the point when time gets significant if you have been occupied and even brief alleviation is significant for you. why not to dispose of the additional carport entryway opener distant and send out the entryway opener usefulness to your mobile phone. Arduino carport entryway opener over Bluetooth utilizing android application well the proposed new strategy is controlling the carport entryway opener with your mobile phone. Everyone conveys phone with him. So by controlling carport entryway with phone, you don't have to keep an additional heap of carport entryway far off with yourself. For controlling the carport entryway with phone application over Bluetooth you need to create custom equipment for this rationale. There is just one-time venture on building up the new equipment. The equipment for this custom rationale isn't hard to assemble. equipment parts are accessible on online hardware sites. You simply need to interface the parts together and we will refer to how to associate the individual equipment segments. It is anything but difficult to interface Bluetooth gadgets. These directions will clarify how I empowered my carport entryways and vehicle start. The execution is very conventional. Comparative methods could be utilized to empower numerous different things as well. The Bluetooth board that was utilized will contain least six associations that could every potential control something alternate. There is an android application that will on/Off. It permits progressively making, naming, and designing numerous catches so you can undoubtedly control the different things that are Bluetooth empowered. Parking management is a crucial issue in intelligent transportation systems (ITS), largely thanks to the growing number of cars worldwide. In parking management, parking guidance so as to issue the look for free parking spaces may be a fundamental service,



and prior studies have proposed many options to deal with this issue. Car-searching is additionally an important service when car owners plan to find their parked cars. because the parking layout of parking facilities is usually quite uniform within the indoor parking room, and should contains hundreds or thousands of parking spaces, it's difficult for car owners to memorize and identify their parking spaces. additionally, car owners with poor sense of direction may lose their ways to the spaces of their parked cars, and thus might not find the car. Significantly, if not using an efficient navigation strategy, the car owner is probably going to return into difficulties when checking out the parked car0.

II. PROBLEM STATEMENT

By using the garage door with mobile app and Bluetooth we need to evolve ordinance hardware. This is only a single type invest and discovering the fresh hardware. The hardware for this device is not very much difficult to develop and make it to action. All hardware parts of this device are seen in our nearby places. We can create the project by using a GSM module through it. Opening the garage door with a custom text message. You can also talk by the module.

III. LITERATURE SURVEY

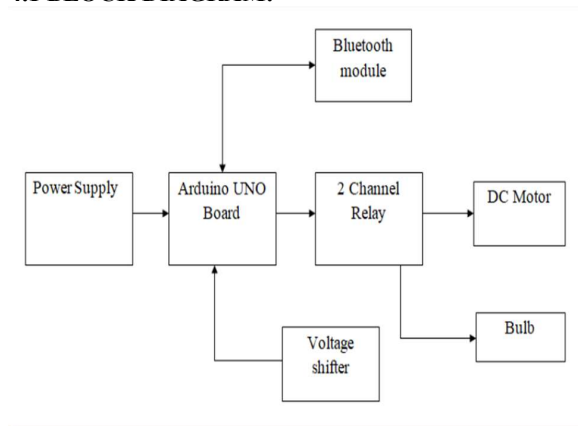
Recently, studies have investigated the issue of pedestrian navigation. Typically, pedestrian navigation focuses on how to plan the guidance of the route to the destination effectively and efficiently. The solution to the navigation of car searching is like that of representative pedestrian navigation. For car searching, the following three tasks should be performed: positioning, route planning, and guidance information presentation. Positioning aims to identify the location of the pedestrian and parking space. Route planning involves the determination of the route from the car owner's location to the parking space of the car. Given the planned route and environmental information (e.g., a map or floor plan), the presentation of guidance information physically shows the planned route and/or direction to the car owner, possibly in visual, audio, haptic, or hybrid forms. The global positioning system (GPS) is a conventional and widely used approach for user localization but may not be accurate for indoor environments because of the indoor shadowing effect. Prior studies have proposed feasible mechanisms for indoor positioning. The mechanisms use information and communication-based technologies, such as infrared, Wi-Fi, Bluetooth, and the vision-based method. The micro-location technique based on beacon technology provides another localization technique in the indoor environment. Beacon technology operates over Bluetooth Low Energy (BLE), which is a wireless form of technology with low power and low cost and is presently considered as the primary form of wireless technology in mobile devices. As a result, beacon technology is regarded as an appropriate indoor positioning solution, and a comprehensive survey of BLE-based indoor positioning

mechanisms for smart phones was proposed in. Mobile devices have currently become prevalent for human beings, and thus it is quite suitable for car owners to use a mobile device to obtain navigation information. The majority of the existing approaches utilize the whole map along with the determined route as the output modality of navigation information. However, the whole map may include unnecessary information for users, therefore increasing their burden when walking toward their destinations. To solve this problem, previous studies have introduced an intuitive navigation scheme known as turn-by-turn navigation. The main concept of the scheme is to provide users with the necessary navigation information, such as directions with the distance and time to turn based on the physical world. The paper proposes a BLE-based pedestrian navigation system, called BLE-PNS, for car searching in indoor parking garages. As car owners search for their own cars and walk toward the spaces where their cars are parked, this paper uses the term "pedestrian" to represent the term "car owner" hereafter. The main concept of BLE-PNS includes self-guiding and effortless navigation. Self-guiding indicates that pedestrians obtain the navigation information according to their mobile devices instead of the facilities of parking garages, e.g., liquid-crystal display (LCD) or light emitting diode (LED) display boards). Effortless navigation implies that the proposed system provides intuitive and accurate navigation information to pedestrians. Recall that the GPS coordinates (i.e., latitude and longitude) are inappropriate for indoor positioning. Thus, in BLE-PNS, we deployed numerous location-aware devices, called anchors, to assist pedestrians to determine their locations, and introduced a local coordinate system to identify the locations of parking spaces and anchors. In addition, BLE-PNS uses the "walk-straight-first" strategy to derive the shortest route with the minimum number of changing directions (i.e., turning left or right) at intersections as the optimal guidance route. With respect to navigation information provision, the proposed BLE-PNS considers the "turn-by-turn" navigation information rather than the map of the whole parking garage with a thorough guidance route for pedestrians. The turn-by-turn strategy is defined as a navigation scheme which only provides users with the guidance indication of the walking direction at the next intersection. Specifically, in our navigation strategy, if a pedestrian does not approach the parking space of the parked car, the mobile device provides an indication with respect to the walking direction (walk straight, turn right, or turn left) at the next intersection. Otherwise, the mobile device provides the local map and emphasizes the parking space where the pedestrian has parked his/her car. The BLE-PNS also proposes an orientation correction scheme to avoid the misunderstanding of navigation information resulting from the "might-mill-around-and-get-off-course" movement of pedestrians. The scheme provides an instant hint to the pedestrian when the pedestrian's heading orientation does not conform to the indicated direction derived from the proposed system. In this study, we considered the parking lot in the campus of Minchin University of Science and Technology as the testing field and conducted a series of field trials to evaluate the performance of the proposed system. We implemented the

prototype of the proposed system, which deploys enough anchors in the predetermined locations of the field and develops the car-searching mobile app running on an Android-based smartphone. The anchor's location is represented by a pair of the coordinates of the proposed local coordinate system. The anchors use the BLE technology to communicate with the pedestrian's smartphone. The field test results showed that the proposed BLE-based pedestrian navigation system can correctly identify the location of the pedestrian. Moreover, the pedestrian can not only obtain the correct route guidance information when walking toward the space of the parked car but also receive instant indication when the pedestrian's heading orientation is incorrect. We also evaluated the performance of the proposed route planning scheme. Simulation results validated that the proposed route planning scheme outperforms the traditional Dijkstra's algorithm in the number of changing directions. The rest of this paper is organized as follows. Section 2 formulates the system model and gives an overview of the proposed system. Section 3 elaborates the design and implementation of the proposed BLE-based pedestrian navigation system. Section 4 shows the field testing and simulation results. Section 5 provides concluding remarks.

IV. PROPOSED WORK

4.1 BLOCK DIAGRAM:



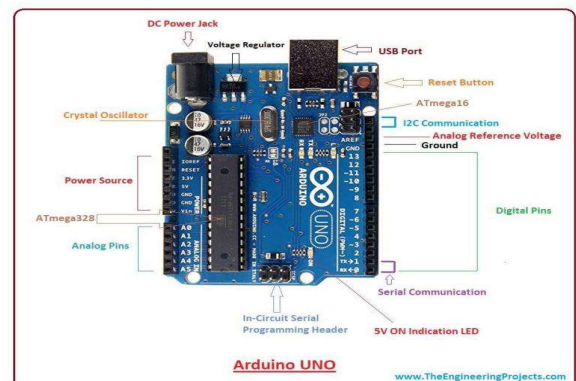
4.2 BLUETOOTH GARAGE DOOR MECHANISM:

We first present the planning issues, including pedestrian positioning, route planning, and guidance information representation intimately, then describe the implementation issues, like the function block, software development, and hardware components of the proposed BLE-PNS. Local frame of reference because the use of the GPS within the indoor environment will most likely cause unexpected positioning errors thanks to environmental limitations; the proposed BLE-PNS utilizes a two-dimensional frame of reference called the local frame of reference (LCS) to spot the locations of anchors and parking spaces. within the proposed LCS, the origin point is that the lowest leftmost point, and therefore the units of the horizontal and vertical coordinates are assumed to be identical. The width and

depth of a parking lot are respectively twice and quadruple that of the coordinate unit of the LCS, respectively. Furthermore, the width of an aisle is twice that of the coordinate unit of the LCS. Each parking lot or anchor possesses a pair of numbers, that is, the vertical and horizontal coordinates. The results of using the proposed LCS to the parking lot layout. The locations of the during this study, unique local coordinates were assigned to every parking lot. However, the proposed LCS is merely meaningful for parking-space positioning and not for the pedestrian's comprehension. That is, pedestrians only know the numbers of parking spaces and not the local coordinates of the parking spaces. Recall that pedestrians provide the target parking lot number to the car-searching app once they want to seek out their parked cars. As a result, the app should be ready to translate the parking lot number to its corresponding local coordinates by employing a one-to-one mapping scheme. The approaches to the representation of the correlation between the parking lot numbers and native coordinates are two-fold: static and dynamic mappings. The static mapping scheme stores all pairs of parking lot numbers and their corresponding local coordinates within the database. This scheme is straightforward but requires a substantial amount of storage. The dynamic mapping scheme uses a conversion formula to derive the local coordinates of a parking lot |car parking zone"> parking lot consistent with the parking space number. This scheme is storage-saving and particularly suitable for giant parking garages because it doesn't require the storage of the parking lot |car parking zone"> parking lot number and native coordinates and only converts the target parking space number to its corresponding local coordinates when necessary.

4.3 OVERVIEW ARDUINO UNO MODULE:

Arduino has several types of line UNO, Arduino mega boards etc., but generally we use UNO boards it's a micro controller

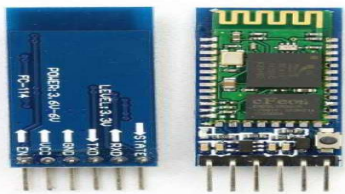


board that's supported ATmega328p. Arduino UNO board has 14 input/output pins (PWM output pins are 6).6 analog inputs ,16MHZ quartz, a sub connection port, power jack, an ICSP header and a push button in it. Earlier while releasing the Arduino boards it named

as Uno because in Italian the uno refers to at least one so for the sooner version Arduino is known as Arduino uno. it's a feature of getting power supply through the USB port. It also can convert from AC to DC and by A battery. The push button is employed for resting the previous codes and it'll be overwritten and also are going to be saved until it's overwritten. By using the USB port, we will also transmit the code through this port it's RF transmitter and receiver it'll blinks for that specific action.

4.4 OVERVIEW OF BLUETOOTH MODULE:

HC-05 Bluetooth Module will be simple to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection. Its communication is via serial communication which makes a simple thanks



to interface with controller or PC. HC-05 Bluetooth module will be switching mode between master and slave mode which will be ready to use neither receiving nor transmitting data.

Specification:

- Model: HC-05
- Input Voltage: DC 5V
- Communication Method: Serial Communication
- Master and slave mode are often switched

4.5 OVERVIEW OF 2-C RELAY MODULE:

The relay module is an electrically operated switch that permits you to show on or off a circuit using voltage and/or current much above a micro-controller could handle. there's no connection between the low voltage circuit operated by the micro-controller and therefore the high-power circuit. The relay protects each circuit from one another. Each channel within the module has three connections named NC, COM, and NO. counting on the input trigger mode, the jumper cap are often placed at high level effective mode which 'closes' the normally open (NO) switch at high level input and at low level effective mode which operates an equivalent but at low level input. Specifications On-board EL817 photoelectric coupler



with photoelectric isolating ant interference ability strong. On-board 5V, 10A / 250VAC, 10A / 30VDC relays. Relay long life can absorb 100000 times during a row. Modules are often directly and MCU I/O link, with the output indicator. Module with diode current protection will have short reaction time. PCB Size: 45.8mm x 32.4mm

4.6 OVERVIEW OF DC SERVO MOTOR:

Almost every mechanical development that we see in everyday life is completed by an electrical motor. Electric machines are a way of converting energy. Motors take electricity and produce energy. Electric motors are utilized to power many devices we use in lifestyle. Electric motors are mainly classified into two types of categories: DC (DC) motor and AC (AC) motor. during this article we are getting to discuss about the DC motor and its working. And also, how a gear DC motors works.

A DC motor is an electrical motor which runs on DC power. In any motor, operation depends upon simple electromagnetism. A current carrying conductor generates a magnetic flux, when this is often then placed in an external magnetic flux, it'll encounter a force proportional to the present within the conductor and to the strength of the external magnetic flux .It is a tool which converts electricity to energy . It works on the very fact that a current carrying conductor placed during a magnetic flux experiences a force which causes it to rotate with reference to its original position. Practical DC Motor consists of field windings to send the magnetic flux and armature which acts as the conductor.



V.RESULTS AND DISCUSSION

In addition to the above materials and tools, you will need an Android device to there are links to the simple commands so that applications for other types of Bluetooth devices can be created. By connecting the Bluetooth module to a general-purpose relay switch it can switch higher voltages and currents. When the Bluetooth module is reset or not set as an output, the pin effectively floats - it has a weak pull-down. The Bluetooth board GPIO 3, 6, 7, 10, and 11 default to low upon power-up and will be off. GPIO 8 and 9 default to high upon power-up and will be on. Finally, the pair of the Bluetooth module to send the data through the Arduino. The



receiving of Arduino to turn on/off control to the motor. Another automation to give the bulb on/off.

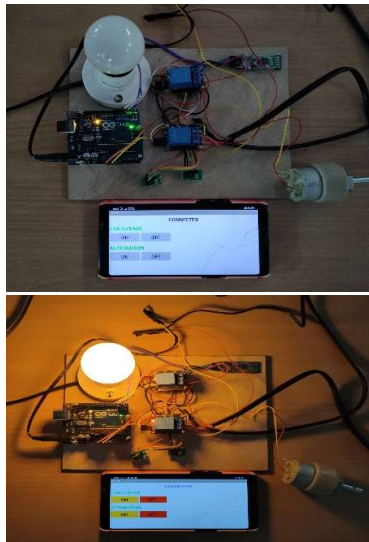


Fig: The Bluetooth module detects the signal and possess signal through Uno board and activates the motor to open the door

V. CONCLUSION AND FUTURE WORK

This undertaking proposed a BLE-based passerby route framework for vehicle looking in indoor parking structures. The proposed framework utilizes a neighborhood arrange framework to aid the limitation of parking spots and anchors. Furthermore, the framework embraces the walk-straight-first and turn-by-turn route techniques to manage the person on foot toward the objective parking spot. The walk-straight-first procedure infers the briefest course with the base number of changing bearings at crossing points, while the turn-by-turn system furnishes the walker with non-map headings at every convergence prior to arriving at the objective stopping module. Just when the person on foot shows up at the walkway of the objective leaving module does the vehicle looking application show the neighborhood map data of the objective leaving module and accentuate the objective parking spot. Furthermore, the proposed framework has the capacity to address the passerby's going direction when this direction doesn't adjust to the framework sign. We executed the model of the proposed framework and assessed the framework execution. The test results checked the accuracy and adequacy of the proposed framework.

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