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Review of Various Functions Controlling Of Vehicle by Using Mobile Bluetooth

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Abstract— this paper shows the various functions controlling of Vehicle using mobile Bluetooth Technology. Due to this technology the work of car user becomes easy. This system has two modes of operations viz RKE and PKE mode. This two keys are operated by 89c2051 and 89s52 microcontroller. The functions which are built in system can be handled away from the Vehicle within the range of 10 meters through Mobile Bluetooth.

***Index Terms*—Bluetooth communication, RKE, PKE**

I. INTRODUCTION

The vehicle ignition by using mobile Bluetooth technology will be a great advantage in terms of human energy and time consuming. It is indeed free of charge or no cost involved and can be activated in safe mode since the vehicle still in lock condition. Therefore, in this project an application will be implemented and developed for mobile phone car ignition system by using Bluetooth technology. The system is constructed by integrating both hardware and software. This is an automatic vehicle locking system. In which there are two units one is placed in the vehicle which locks the vehicle if another unit (key) is outside the range. When only the driver or owner of the vehicle is in the range of the vehicle, the vehicle ignition will unlock along with the door and window. The Bluetooth is interfaced with the wires by the ignition switch at the auto starter car alarm remote control, which controls all the main functions in a vehicle. The mobile phone start module basically simulates turning a key in the ignition switch to start the vehicle and keep it running consistently. Whereby, the microprocessor inside the remote auto starter module constantly monitors the engine temperature as well as performance. Therefore, it will be ideally triggered whenever users feel they would like to start their car engine at any time. [5]

II. SYSTEM OVERVIEW

A. BLUETOOTH SECURITY

In any wireless networking setup, security is a concern. Devices can easily grab radio waves out of the air, so people Who send sensitive information over a wireless connection need to take precautions to make sure those signals aren't intercepted.

Bluetooth technology is no different -- it's wireless and therefore susceptible to spying and remote access, just like Wi-Fi is susceptible if the network isn't secure. With Bluetooth, though, the automatic nature of the connection, which is a huge benefit in terms of time and effort, is also a benefit to people looking to send you data without your permission. Bluetooth offers several security modes, and device manufacturers determine which mode to include in a Bluetooth-enabled gadget. In almost all cases, Bluetooth users can establish "trusted devices" that can exchange data without asking permission. When any other device tries to establish a connection to the user's gadget, the user has to decide to allow it. Service-level security and device-level security work together to protect Bluetooth devices from unauthorized data transmission. Security methods include authorization and identification procedures that limit the use of Bluetooth services to the registered user and require that users make a conscious decision to open a file or accept a data transfer. As long as these measures are enabled on the user's phone or other device, unauthorized access is unlikely. A user can also simply switch his Bluetooth mode to "non-discoverable" and avoid connecting with other Bluetooth devices entirely. If a user makes use of the Bluetooth network primarily for synching devices at home, this might be a good way to avoid any chance of a security breach while in public. Still, early cell-phone virus writers have taken advantage of Bluetooth's automated connection process to send out infected files. However, since most cell phones use a secure Bluetooth connection that requires authorization and authentication before accepting data from an unknown device. [1]

B. KEYLESS SYSTEM

Keyless entry is a standard feature in vehicles that have installed alarm systems. A small battery operated device or *remote* hangs on the key chain and features one or more buttons for arming and disarming the alarm. The button operates the door locks as well. When one approaches the car, a press of the button will not only disarm the alarm, but unlock the driver's door, making it unnecessary to use a key. Hence, it allows keyless entry.

Types of Keyless system:
1.R**emote keyless system**
2.Passive keyless system

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A **remote keyless system** is a system designed to permit or deny access to premises or automobiles. While the "remote" system is portable and has locking capabilities, the exact phrase "keyless entry" is solely reserved for the numeric dials or keypads that are located on or near the driver side door. By entering the correct, pre-determined numeric code, one can gain access to a vehicle without a key - hence the phrase "keyless entry"; entry without a key. In the case of automobiles an RKS performs the functions of a standard car key without physical contact; power door locks can be locked or unlocked from several feet away or even from inside a building. (In this regard, the term "keyless" is a misnomer since the fob acts as an electronic key. Locking it in the car is just as much of a problem as doing the same with a mechanical key.) [7] [8] [9]

C. PASSIVE KEYLESS ENTRY SYSTEM

A Passive Keyless Entry solution provides the user with the convenience of unlocking a car door without pressing any buttons. The module inside the door initiates communication by sending out a signal between fixed time intervals to search for the paired Key Fob. Once in the proximity of the car door, the Key Fob sends back an acknowledgment signal. Upon positive authentication by the Receiver block, it signals the car door to be unlocked. [7] [8] [9]

Fig.No.1 Bluetooth Range

D WHY TO USE BLUETOOTH

	ZigBee	**Bluetooth**
Data Rate	20, 40, and 250 Kbits/s	1 Mbits/s
Range	10-100 meters	10 meters
Networking Topology	Ad-hoc, peer to peer, star, or mesh	Ad-hoc, very small networks
Operating Frequency	868 MHz (Europe) 900-928 MHz (NA), 2.4 GHz (worldwide)	2.4 GHz
Complexity (Device and application impact)	Low	High
Power Consumption (Battery option and life)	Very low (low power is a design goal)	Medium
Security	128 AES plus application layer security	64 and 128 bit encyption
Other Information	Devices can join an existing network in under 30ms	Device connection requires up to 10 seconds
Typical Applications	Industrial control and monitoring, sensor networks, building automation, home control and automation, toys, games	Wireless connectivity between devices such as phones, PDA, laptops, headsets

Table No. 1 – Bluetooth Comparison

III. SYSTEM BLOCKS

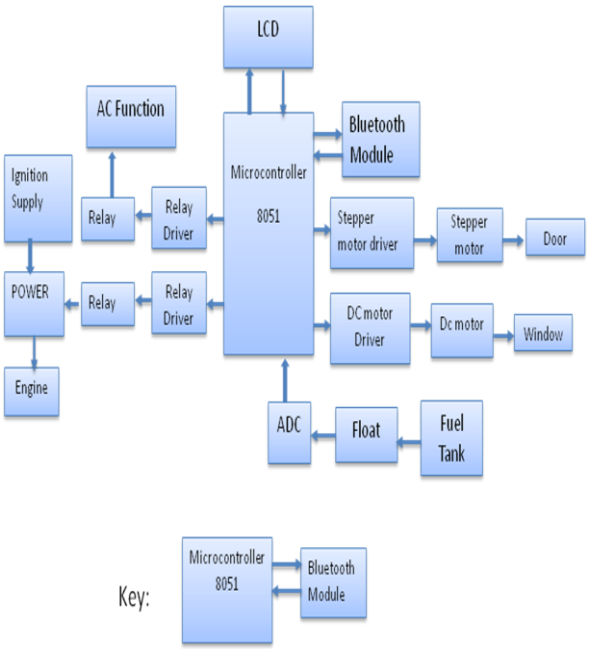

Fig.No.2 Block Diagram

This is an automatic vehicle locking system. In which there are two units one is placed in the vehicle which locks the vehicle if another unit (key) is outside the range. When only

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IV. SYSTEM ANALYSIS

A. Bluetooth

Blue LINK is a compact Bluetooth Module (5V Serial TTL) from rhydoLABZ. The module has built-in Voltage regulator and 3V3 to 5V level converter that can be used to interface with 5V Microcontrollers. The module has only 5 pins (Standard 2.54mm berg strip) VCC, GND, TX, RX and RESET. The module is factory configured in Transparent Mode and hence there is no command required for normal operation.

Features:

- Support Master & Slave Mode
- Support UART interface to host system
- Serial communications @ 2400-115200bps
- Breadboard Compatible
- Frequency: 2.4~2.524 GHz
- Power Supply: 5V [1]

B. Microcontroller 89s52 :

Features:

• Compatible with MCS®-51 Products
• 8K Bytes of In-System Programmable (ISP) Flash Memory
• Fully Static Operation: 0 Hz to 33 MHz
• 256 x 8-bit Internal RAM
• 32 Programmable I/O Lines
• Three 16-bit Timer/Counters
• Eight Interrupt Sources
• Full Duplex UART Serial Channel [4]

C. Stepper Motor

Stepper Motor is known by its important property to convert a train of input pulses i.e. a square wave pulses into a precisely defined increment in the shaft position. Each pulse moves the shaft through a fixed angle. A stepper motor is an electrically powered motor that creates rotation from electrical current driven into the motor.

Physically, stepper motors can be large but are often small enough to be driven by current on the order of milli ampere. Current pulses are applied to the motor, and this generates discrete rotation of the motor shaft. This is unlike a DC motor that exhibits continuous rotation.

D. Relays

Relays are components which allow a low-power circuit to switch a relatively high current on and off, or to control signals that must be electrically isolated from the controlling circuit itself. To make a relay operate, you have to pass a suitable pull-in and holding current (DC) through its energizing coil. In each case the coil has a resistance which will draw the right pull-in and holding currents when it is connected to that supply voltage. So the basic idea is to choose a relay with a coil designed to operate from the supply voltage you.re using for your control circuit (and with contacts capable of switching the currents you want to control), and then provide a suitable relay driver circuit so that your low-power circuitry can control the current through the relays coil. Typically this will be around 70ma.

E. Microcontroller At89c2051.

Features:

• Compatible with MCS-51™ Products
• 2K Bytes of Reprogrammable Flash Memory
• 2.7V to 6V Operating Range
• Fully Static Operation: 0 Hz to 24 MHz
• Two-level Program Memory Lock
• 128 x 8-bit Internal RAM
• 15 Programmable I/O Lines
• Two 16-bit Timer/Counters
• Six Interrupt Sources
• Programmable Serial UART Channel
• Direct LED Drive Outputs
• On-chip Analog Comparator
• Low-power Idle and Power-down Modes [4]

F. Algorithm & Flowchart of Receiver Section

1) Start
2) Iinitialize uart mode
3) Initialize lcd
4) Wait for data to be received serially
5) Is data received= door lck_ulk then COMPLIMET the vehicle DOOR LOCK
6) Is data received= ignition lck_ulk then compliment IGNITION ON/OFF
7) If cmd auto received then unlock the door and turn on the ignition
8) Stop

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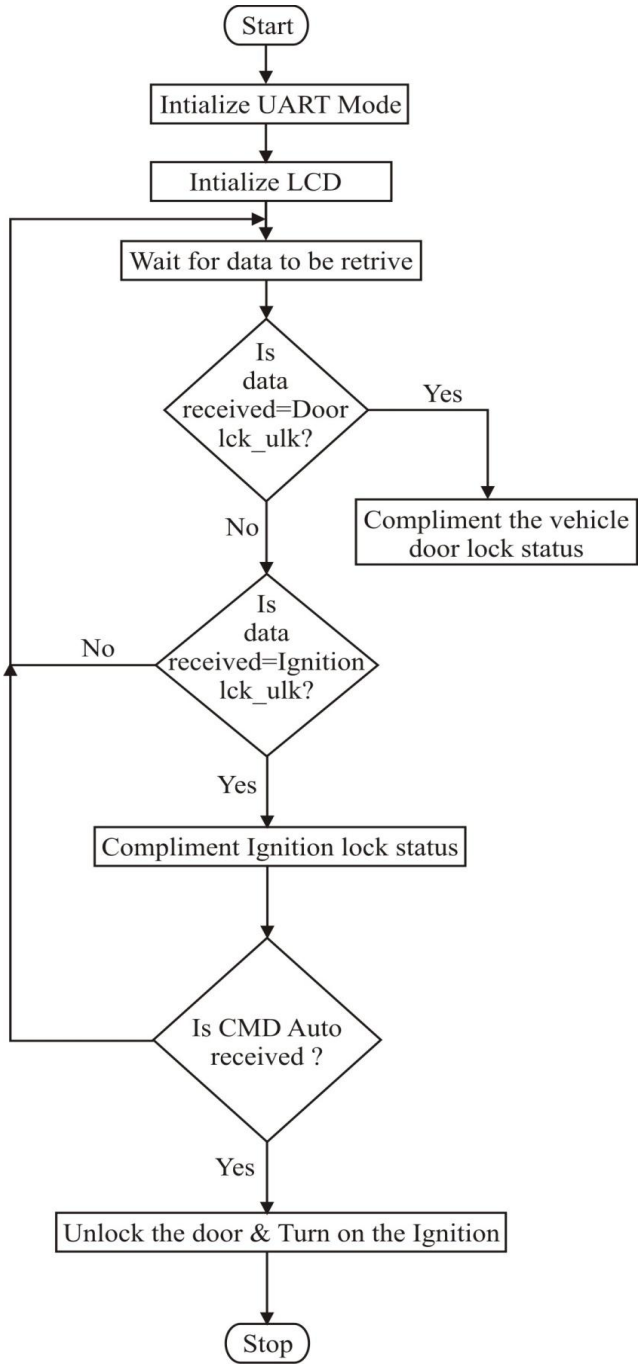

Fig.No.3 Algorithm & Flowchart of Receiver Section

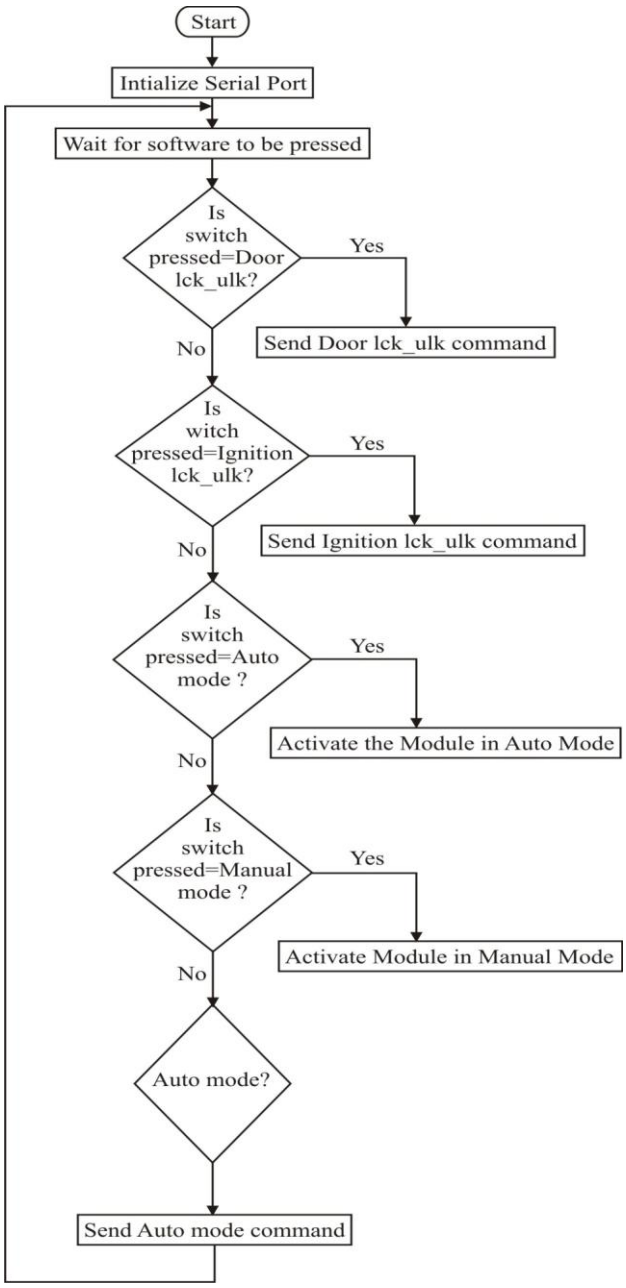

Fig.No.4 Algorithm & Flowchart of Transmitter Section

G. Algorithm & Flowchart of Transmitter Section

1) Start.
2) Initialize serial port.
3) Wait for switch to be pressed.
4) If switch pressed=door lck_ulk then send door lck_ulk command
5) If switch pressed=ignition lck_ulk then send ignition lck_ulk command
6) If switch pressed=Auto mode then activate the module in auto mode.
7) If switch pressed=Manual mode then activate the module in manual mode.
8) If in auto mode the send auto mode command
9) Go to 3
10) STOP

V. CONCLUSION

'Bluetooth based vehicle inter lock system' is successfully implement & design through this project. We have design & operational various attributes of the vehicle like Ignition locking, Door Locking, Fuel indication, AC function, Window locking through the Bluetooth Device. This projects is feasible for following functions & which are beneficiary of

- Various control mechanism away from vehicle.
- Time saving/ Comfortable to user
- Secured

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