Smart Locking System Using Bluetooth Technology

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Abstract: The safety in the house is very important. This project presents a prototype smart door locking which can be used to enhance security of a door. Here we are utilizing Bluetooth technology to scan Bluetooth Devices at the door knob for automatic door lock purposes. Also there is an android application which can be used to control various appliances inside the house as well as door lock.

I. INTRODUCTION
Security describes protection of life and property. The safety in the house is very important. Besides the traditional method door that used a key can be easily open by not authorized person or burglar if they have the right key. This will allows them to steal the entire valuable thing in the house. Nowadays the telecommunication technologies become wider and more new features exist to make human life better this project will use a Bluetooth feature in mobile phone to automatically open the door so that Bluetooth technology syncs your phone directly with the lock. It will automatic open if authorized person is detected. The door will open for a certain delay and the door automatically closes within this time. The system is designed such that the motion of the user will be captured from the camera and the user will be detected and then only he will be given a key to lock or unlock.

II. EXISTING SYSTEM
The locking system currently used is safe, secured and useful which uses high-tech technologies in order to give maximum security to the user. It uses motion sensor and Bluetooth technology to connect with the user. The existing system tries to eliminate the system of lock (as an object) and replace it with a locking system which doesn’t use a physical lock instead uses an application for the same purpose. It makes use of various applications and databases for the security of the system as more technology requires more security details to be stored.

III. PROBLEM STATEMENT
The existing system is very expensive. It is not a feasible locking system especially for middle classed people or families. It has taken too many security measurements. Such high security requirements are not required for a simple door lock. It is very difficult to maintain a database of such a kind for a simple door lock as it makes use of too many security stuffs.

IV. PROPOSED SYSTEM
The proposed system is feasible by both rich and middle classed families. It’s not expensive. It uses simple security systems required for a door lock and is very safe. It is simple. It uses an android application. The main objective of this system is to provide maximum security at minimal cost.

V. LITERATURE SURVEY
A. Bluetooth Module
Bluetooth is a wireless connection technology that allows you to connect several devices in your home. Like Wi-Fi, you can use Bluetooth to exchange files and operate electronics. Wireless headsets, cell phones and even gaming consoles can all use Bluetooth in one way or another. While Bluetooth has certain limitations, such as a shorter range and lower bandwidth than WiFi, it can make connectivity between devices in your home more reliable than other wireless alternatives.

B. Simple Setup
Setting up a Bluetooth connection between two devices is quick and easy. The exact interface for doing so varies depending on your devices, but to connect two devices you need make one discoverable while the other one scans. Once the scanning device finds the discoverable one, you initiate the connection and enter the PIN as directed by your user’s manual. That's all there is to it. You
shouldn't have to reconnect the devices once they've been paired.

C. Compatibility

A Bluetooth headset is compatible with any other device that supports Bluetooth, regardless of make, model or design. You can use it with your mobile phone or pair it with your gaming console or computer for easy chatting online. Your Bluetooth keyboard can work with your computer and your PlayStation. The only issue you're likely to encounter is if the device in question can only pair with a limited number of devices.

D. Less Hardware

Obviously the lack of wires is a benefit of Bluetooth, but it's even less bulky than WiFi. To create a wireless network in your home using WiFi you will need a router to set up the access point. All communication between two devices on a wireless network must go through your wireless router. With Bluetooth, the devices speak directly to one another. As long as your devices already have Bluetooth enabled, you do not need any additional hardware to connect them. If you do need extra hardware, it's in the form a small USB dongle that adds Bluetooth connectivity to your computer or device.

E. Security

Bluetooth has inherent security in two ways. The first is that it is not always broadcasting, unlike a Wi-Fi connection. When you want to connect two devices via Bluetooth you set them to be visible, also sometimes called "discoverable." This visibility is only necessary until the devices have been paired. Once paired, you can turn off visibility and keep the device closed to new connections. The second level of security is that in most cases you will need to authorize the connection using a PIN or code to connect two devices. For instance, if you have your laptop's Bluetooth set to discoverable, a stranger still can't connect to your computer until you approve the connection manually. Finally, the shorter range of Bluetooth devices means that users outside your home are unlikely to even see your Bluetooth device.

VI. ADVANTAGES

Smart locks are no doubt really convenient. These devices allow to completely forget about your house keys, which then can no longer be lost in women’s handbags, left somewhere, maybe at home before going out, with the risk of being locked out. The automatic opening and locking system, activated through smartphones and biometric readers, eliminates this dilemma. This system is especially convenient for those families where parents very often have to rush to the rescue of their children, who have forgotten the keys and cannot enter into the house, after a night out with some friends.

VII. DISADVANTAGES

A part from all the advantages mentioned above, smart locks also have some disadvantages. The most striking problem for those models operating with smartphones, is linked to the possibility of not being able to open the door when the battery of the smartphone is down. How often the battery of your smartphone is down at the end of the day? Unfortunately, the autonomy of these devices is limited and whenever you cannot recharge your smartphone, the risk of being unable to open the door is possible. This kind of inconvenience is pretty relevant, and it would never happen with a conventional lock.

VIII. HARDWARE

ARDUINO UNO: The Arduino UNO is a widely used open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc. The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits. The board features 14 Digital pins and 6 Analog pins. It is programmable with the Arduino IDE (Integrated Development Environment) via a type B USB cable.

A. BLUETOOTH MODULE

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from fixed and mobile devices, and building personal area networks (PANs). The technology uses modifications of existing wireless LAN techniques but is most notable for its small size and low cost.

B. RELAY

A relay is used to isolate one electrical circuit from another. It allows a low current control circuit to
make or break an electrically isolated high current circuit path.

C.Cd4016

A Bilateral switch which uses a special CMOS circuit called transmission gate. The circuit behaves as a SPST (single pole/throw) switch which is under electronic control.

IX.SOFTWARE

A.Atmel AVR Studio 5

It is small and reasonably simpler to learn, understand, program and debug. Compared to assembly language, C code written is more Reliable and stable. It is fairly efficient. It supports access to I/O and provides ease of management of large embedded projects.

X.CIRCUIT DIAGRAM

XI.CONCLUSION

In this project, smart door lock system based on Bluetooth which integrates the home security with home automation. Home security system for automatic doors provides advance security of today's standard for home owners. Since our proposed system is built over wireless sensor network, it is a cheap, flexible, and easily installable system without any overhead such as careful planning, cabling, and construction works.