

CAR AUTOMATION BY USING SMARTPHONE

Sanjay G. Galande ¹, Dr G.H. Agrawal ², Dipali D. Pund ¹

¹*E&TC, Pravara Rural Engineering College, Loni, (India)*

²*Electrical Engineering, KDK College, Nagpur, (India)*

ABSTRACT

For an agreeable life, more individuals incline toward auto for transportation. This basically expanded number of autos out and about. For security of the general population, government has chosen least and greatest age to drive an auto as permit. Be that as it may, individuals have a tendency to abstain from taking after principles and adolescents and senior nationals are discovered driving vehicles without a substantial permit. This is one reason for expanded number of mishaps nowadays. Keeping in mind the end goal to decrease rate of mishaps, principles of government should be taken after and that can be guaranteed if just individuals with permit could drive an auto. For guaranteeing this point of wellbeing, auto mechanization by utilizing android OS comes as a prime device. Two principle innovations are used in this in particular Bluetooth for availability and biometrics for unique mark examining and correlation. GSM is likewise introduced alongside microcontroller in auto to send SMS to the driver or proprietor when unapproved individual is attempting to begin an auto or take it.

Keywords – Android OS, GSM, Bluetooth, Biometric

I INTRODUCTION

Nearly everybody from center or more salary gatherings possesses an auto. Being auto buy a major speculation, individuals consider the usage of more propelled innovations in vehicle industry in their auto. These components, in this way permit them for expanded premiums, prompted a noteworthy help in their mechanical perspectives by presenting mechanization in these vehicles. This additionally permits them to give easy to use and propelled components to their clients [1]. As the buying force of individual increments, appropriately, rate of increment in number of autos on street is additionally expanding keeping in mind the end goal to making life less demanding/agreeable. Adolescents likewise drive autos without permit or proper preparing bringing on more mischances. To stay away from these mischances, proposed arrangement of auto robotization can be advantageous. Mechanization of auto utilizing Bluetooth innovation is less demanding to work. There are a few different techniques for individual region system for auto robotization like Wi-Fi, IOT, IRDA, GSM, and Bluetooth and so on. Every association sort has its own novel particulars and applications [2].

Among these remote associations, those frequently actualized in an auto are Bluetooth and GSM, being picked because of its reasonable limit. Bluetooth with all around accessible recurrence of 2400Hz can give network 10m to 100m at velocity of 3Mbps relying upon chose Bluetooth gadget class. The framework can be introduced at the season of assembling or later as retrofit [3]. Unique finger impression format of driver is put

away alongside permit card number in microcontroller introduced in the auto. From that point, at whatever point driver needs to switch ON an auto, he needs to send his card subtle elements through Bluetooth module and output his unique mark by finger impression scanner. In the event that both permit card number and unique mark format is coordinated with past information put away in microcontroller then just motor of the auto will switch ON else it will stay in OFF condition. Along these lines, we can counteract to drive old individuals and youngsters from driving the individuals who don't hold a legitimate permit card. It along these lines, thus diminishes in number of mishaps Also, GSM can be utilized for exchanging OFF motor of the auto after its stolen by criminal by sending SMS to auto module [4].

II TECHNIQUES USED

2.1. Biometric system

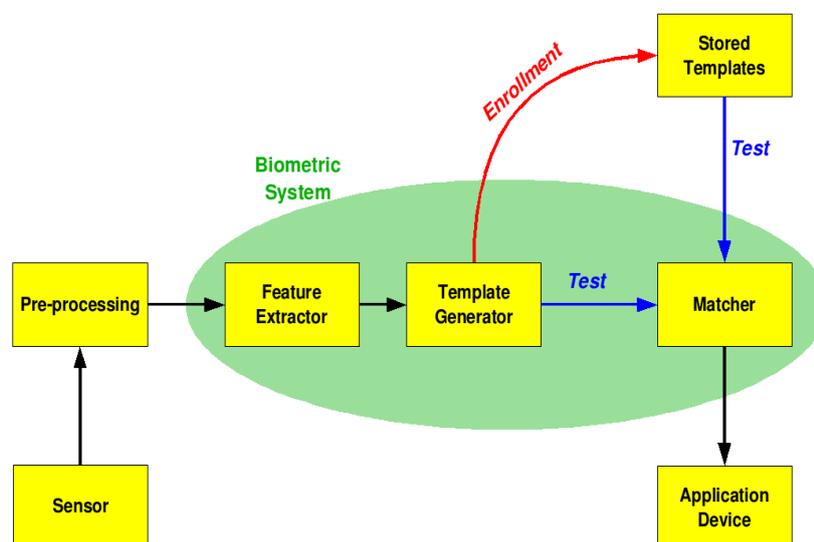


Fig. 2.1 System Architecture

Explanation

Biometrics is the estimation and measurable examination of individuals' physical and behavioral attributes. The innovation is for the most part utilized for ID and access control, or for distinguishing people that are under observation. The essential reason of biometric verification is that everybody is remarkable and an individual can be recognized by his or her inborn physical or behavioral attributes [5]. (The expression "biometrics" is gotten from the Greek words "bio" which means life and "metric" intending to quantify). There are two principle sorts of biometric identifiers specifically, Physiological attributes i.e. the shape or creation of the body including yet not restricted to fingerprints, DNA, face, hand, retina or ear components and smell. Behavioral qualities i.e. the example of the conduct of a man like motions, voice and writing designs. Certain biometric identifiers are utilized for nonstop verification rather than a solitary ON-OFF validation check. Case can screen keystrokes continuously [6].

2.1.1. Fingerprint scanner

The caught picture of finger is known as a live output. This live output is handled digitally to make a biometric layout which is put away and utilized for coordinating. There are diverse sorts of unique mark scanner, for example, optical scanner, capacitive scanner, ultrasonic scanner and so forth.

2.1.1.1. Optical scanner

Optical unique mark scanners are the most seasoned technique for catching and looking at fingerprints. This system depends on catching an optical picture, basically a photo, and utilizing calculations to identify interesting examples at first glance, for example, edges or one of a kind imprints by dissecting the lightest and darkest regions of the picture. These sensors can have a limited determination and the higher the determination, the better subtle elements the sensor can recognize about your finger, expanding the level of security [7]. Be that as it may, these sensors catch much higher differentiation pictures than a consistent camera. These scanners normally have a high number of diodes per inch to catch these points of interest very close. As it's exceptionally dull when a finger is put over the scanner, optical scanners additionally join varieties of LEDs as a blaze to illuminate the photo come filter time. The significant disadvantage with optical scanners is that they are anything but difficult to trick. As the innovation is just catching a 2D picture, prosthetics and even different pictures of adequate quality can be utilized to trick this specific outline. This sort of scanners is not viewed as sufficiently secure for most delicate points of interest or things. With expanding interest for harder security, savvy gadgets have consistently received unrivaled capacitive scanners [8].

2.1.1.2. Capacitive scanners

This is the most generally discovered sort of unique mark scanners utilized today. As name recommends, primary segment of the scanner framework is Capacitor. Rather than making a conventional picture of a unique finger impression, capacitive unique finger impression scanners use exhibits little capacitor circuits to gather information around a finger impression. As capacitors can store electrical charge, associating them up to conductive plates on the surface of the scanner permits them to be utilized to track the subtle elements of a unique mark. The charge put away in the capacitor will be changed marginally when a finger's edge is put over the conductive plates, while an air crevice will leave the charge at the capacitor generally unaltered. An operation amp integrator circuit is utilized to track these progressions, which can then be recorded by a simple to-advanced converter. Once caught, this advanced information can be broke down to search for unmistakable and exceptional unique mark traits, which can be put something aside for a correlation at a later date [9]. What is especially keen about this configuration is that it is much harder to trick than an optical scanner. The outcomes can't be recreated with a picture and is unimaginably difficult to trick with some kind of prosthetic, as various materials will record somewhat distinctive changes in control at the capacitor.

The main genuine security dangers originate from either equipment or programming hacking. Making a sufficiently vast cluster of these capacitors, regularly hundreds if not thousands in a solitary scanner, takes into consideration a very definite picture of the edges and valleys of a unique finger impression to be made from simply electrical signs. Much the same as the optical scanner, more capacitors results in a higher resolution of the scanner expanding the level of security up to a specific point of confinement. Because of the bigger number

of parts in the location circuit, capacitive scanners can be a costly. Some early usage endeavored to cut the quantity of capacitors required by utilizing "swipe" scanners, which would gather information from a littler number of capacitor segments by rapidly invigorating the outcomes as a finger is pulled over the sensor. Be that as it may, this technique frequently required a few endeavors to filter the outcome without blunder. Presently, press and hold plans are more mainstream [10].

2.1.1.3. Ultrasonic scanners

The most recent unique finger impression checking innovation to enter the cell phone space is an ultrasonic sensor. To really catch the subtle elements of a unique mark, the equipment comprises of both an ultrasonic transmitter and a collector. An ultrasonic heartbeat is transmitted against the finger that is set over the scanner. Some of this heartbeat is ingested and some of it is bobbed back to the sensor, contingent on the edges, pores and different points of interest that are novel to every unique mark. Returning ultrasonic signs are not heard by any amplifier, rather a sensor is utilized to distinguish mechanical anxiety which then computes the power of the returning ultrasonic heartbeat at various focuses on the scanner. Checking for more timeframes takes into account extra profundity information to be caught, bringing about a very natty gritty 3D generation of the filtered unique mark. The 3D way of this catch system makes it a significantly more secure contrasting option to capacitive scanners.

2.2. Bluetooth

A Bluetooth gadget utilizes radio waves rather than wires or links to associate with another gadget. Bluetooth items like headsets, speakers or watches contain a modest PC chip with a Bluetooth radio and programming that makes it simple to interface. For two Bluetooth gadgets to impart information to each other, they should be combined. These interchanges between Bluetooth gadgets happens over specially appointed systems known as piconet essentially a system of gadgets associated utilizing Bluetooth innovation. The system ranges from two to eight associated gadgets. At the point when a system is set up, one gadget plays the part of the expert while the various gadgets go about as slaves. Piconets are built up progressively and naturally as Bluetooth gadgets enter and leave radio vicinity.

Diverse variants of the center particular of Bluetooth

2.2.1. Bluetooth Bit rate/upgraded information rate

2.2.2. Bluetooth with low vitality usefulness.

Advantages

1. **Reduce cost** - Bluetooth can be added for a low cost. For using it in a device, one will required to purchase a module on chip and purchase an administrative fee for the use of the brand and permits of the method. The administrative fee depends on company size.
2. **Easy availability** -Therefore, it's wide spread applications, one can search Bluetooth built into almost all devices like phone, laptop, desktop and tablet. This makes it so convenient to connect every Bluetooth enabled gadget may it be keyboard, mouse, speakers or fitness band.

3. **Low supply requirements-** Bluetooth Smart enabled developers to create low sensors which can run on tiny cell batteries for months, and in some cases, years.
4. **Ease of use-** In simple steps, its ready to connect. One need to turn on Bluetooth from setting and pair the device and it starts communicating. From a development standpoint, creating a Bluetooth product starts with the core specification and then you layer profiles and services onto it. There are several tools that the SIG has to help developers.

2.3. Global System for Mobile communication (GSM)

GSM (Global System for Mobile correspondence) is a computerized versatile communication framework that is generally utilized as a part of Europe and different parts of the world. GSM utilizes a variety of time division numerous entrance (TDMA) and is the most generally utilized of the three advanced remote communication advances (TDMA, GSM, and CDMA). GSM digitizes and packs information, then sends it down a channel with two different floods of client information, each time permitting space. It works at either the 900 MHz or 1800 MHz recurrence band.

III METHODOLOGY

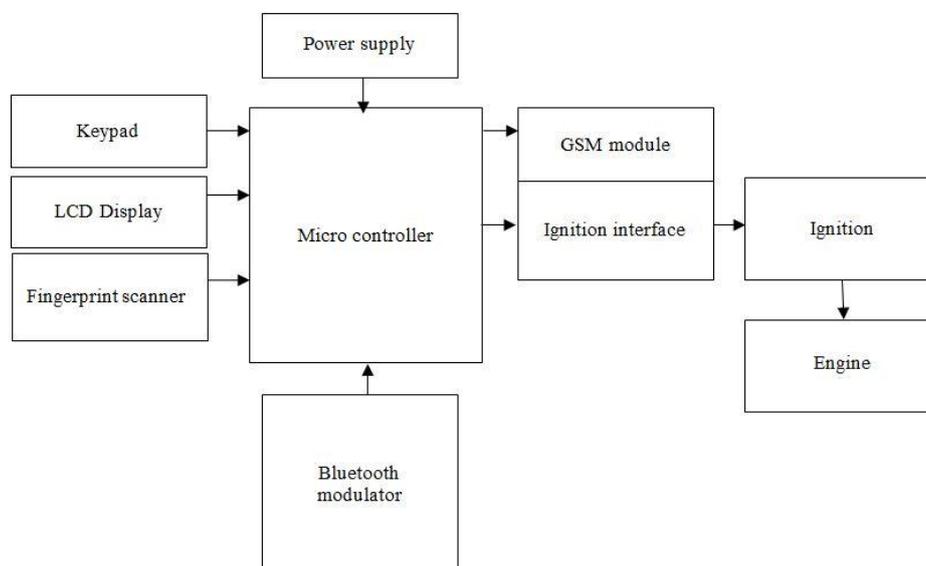


Fig. 2.3 Car Automation

IV WORKING

At the season of issuing driving permit card unique mark of driver is put away in the permit card. At same time one module is introduced in the auto in that store the permit card no alongside unique finger impression of driver. The auto module comprises of ARM7 microcontroller, unique finger impression module, GSM, start interface, Bluetooth and so forth. At whatever point auto proprietor needs to drive auto then he ought to

combine his/her versatile with auto module by utilizing Bluetooth. Show demonstrates to put finger on unique mark scanner, after microcontroller approach you for enter card no .Then enter the permit card no. on the off chance that card no and unique finger impression blend is matches then just start of motor begin. Else it will stay off. So it demonstrates that lone individual those having permit card no one but they can drive. In the event that whatever other individual tries to begin motor then SMS sends to proprietor of the auto by GSM. Along these lines we can abstain from expanding rate of mischance and vehicle burglary.

V ADVANTAGES

- 5.1 Increase the security of car
- 5.2 Safety driving
- 5.3 Avoiding accident
- 5.4 Protection children from risk of tampering car
- 5.5 Prevent any unauthorized entry in the car

VI CONCLUSION

Accordingly, a framework has been proposed which can successfully perform different control activities on the remote vehicle. Operations, for example, start lock, entryway lock can be performed remotely and safely to guarantee security. As this is being done over the GSM system there are no reach restrictions included. The same operation can be performed from a short range if there should arise an occurrence of system disappointment utilizing Bluetooth. The authorized security calculation for Bluetooth makes it difficult to rupture. Furthermore, burglary ready and element area data is likewise given to the vehicle proprietor if interruption happens. All the above capacities are performed utilizing a Smartphone which makes the framework versatile and more helpful and encourages usability. Digitization of records gives effective administration to the powers dissimilar to the customary printed material which is as yet being taken after. With such a framework people can oversee their vehicles with and enhanced availability and less dynamic inclusion. Such a framework with high efforts to establish safety, cost viability and simple operability, vehicle burglary rates can accordingly be diminished altogether.

REFERENCES

- [1] Ashraf Tahat, Ahmad Said, Fouad Jaouni, Waleed Qadamani, "Android-Based Universal Vehicle Diagnostic and Tracking System", *IEEE 16th International Symposium*, 2012 IEEE.
- [2] Thiyagarajan Manihatty Bojan Umamaheswaran Raman Kumar and Viswanathan Manihatty Bojan , "Designing Vehicle Tracking System - An Open Source Approach", *IEEE International Conference on Vehicular Electronics and Safety (ICVES)*, 2014 IEEE.
- [3] Pham Hoang Oat, Micheal Driberg and Nguyen Chi Cuong, "Development of Vehicle Tracking System using GPS and GSM Modem", *IEEE Conference on Open Systems (ICOS)*, 2013 IEEE.

02 Days, 5th International Conference on Recent Trends In Engineering, Science & Management

Parvatibai Genba Moze College of Engineering, Wagholi, Pune
9th-10th December 2016 , www.conferenceworld.in

(ICRTESSM-16)

ISBN: 978-93-86171-12-2

- [4] J.A. Rubella, M.Suganya¹, K.Senathipathi, B.S. Kumar, K.R.Gowdham, M.Ranjithkumar, “Fingerprint based license checking for auto-mobiles”,*IEEE- Fourth International Conference on Advanced Computing, ICoAC* ,2012 IEEE
- [5] Omidiora E. O., Fakolujo O. A., Arulogun O. T., Aborisade D. O., (2011), A Prototype of a Fingerprint Based Ignition Systems in Vehicles, *European Journal of Scientific Research*, ISSN 1450-216X Vol.62 No.2 (2011), pp. 164-171.
- [6] Ashkan Tashk, IEEE, and Mohammd Sadegh Helfroush, “An Automatic Traffic Control System based on Simultaneous Persian License Plate Recognition and Driver Fingerprint Identification”,*20th Telecommunications forum TELFOR* ,2012 IEEE.
- [7] Zhaoxia Zhu, Fulong Chen, “Fingerprint Recognition-Based Access Controlling System for Automobiles”, *4th International Congress on Image and Signal Processing* ,2011 IEEE.
- [8] CHANG Ning, “The implementation of fingerprint identification processing algorithm on DSP”,*International Conference on Intelligent Computation Technology and Automation*,2010 IEEE.
- [9] Emilian Lefter, Bogdan-Adrian Enache, Mirela Constantinescu, “Aspects of simulating the behavior of an internal combustion engine for electric starter testing”, *International Conference – 6th Edition*,2014 IEEE.
- [10] Maddu Kamarajui, Penta Ani! Kumar, “DSP based Embedded Fingerprint Recognition System”, *13th International Conference on Hybrid Intelligent Systems (HIS)*,2013 IEEE.