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Fingerprint Based Licensing System for Driving

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Abstract: The main objective of this project is to prevent non-licensees from driving and causing accidents, a new system is proposed. An important and very reliable human identification method is fingerprint identification. Fingerprint identification is one of the most popular and reliable personal biometric identification methods. Existing security principle for the vehicles uses remote control access technology. No strong security systems designed so far. So car thefts have increased in large numbers. In this project we have developed seat belt detector, door lock sensor, alcohol sensor and Bio metric sensors. All stages need to be cleared to switch on the ignition. All stages can be performed sequentially.

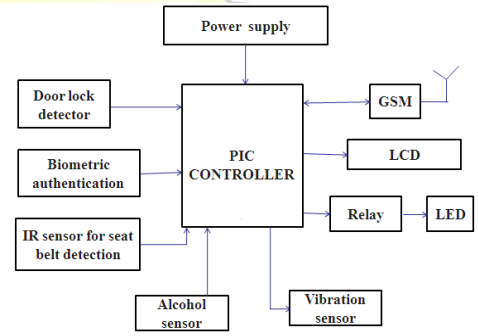
Keywords: Authentication, Fingerprint Identification, License, Sensors

I. INTRODUCTION

Unlicensed driving is a matter of concern for several reasons. It is possible that drivers who have not undergone appropriate training and testing may be deficient in some aspect of the knowledge and skills required to drive safely and efficiently. Also, drivers who are unauthorized may have less incentive to comply with road traffic laws in that they would not be influenced by the rewards and penalties set up under the licensing system. On this argument, drivers who do not hold a valid license may disregard the threat of license sanctions or the benefits of reduced insurance premium due to not having made a claim. It is noticeable in the literature [1] that the term "unlicensed" is used interchangeably to mean one of the below subcategories, as follows:

II. WORKING OF THE SYSTEM

The system operates in the following manner, Initially door lock detection is done using metal sensor. If the door is locked properly, the next stage i.eseat belt detection will be displayed in the LCD. Seat belt detection is done using IR sensor. When the seat belt is weared, the next stage will be displayed otherwise it will remain in the same process. The next operation will be alcohol sensor. This sensor detects the alcohol concentration in our breath. It acts like a normal breath analyzer. After the alcohol sensor, the next sequence of operation will be vibration sensor.



After the completion of the sensors, biometric authentication takes place. In biometric authentication human body characteristics such as finger print is obtained and stored as a template in the database which is known as enrollment. Before vehicle ignition, the user's finger print is compared with the template. If both the images are matched relay gets on and vehicle ignition takes place, otherwise responsive GSM will be initiated. Vein authentication is done using matlab. Based on the match score generated (>95%) access rights will be given.

III. IR SENSOR

An infrared sensor is anelectronic device that emits an infrared radiation in order to sense some aspect of its surroundings. Here we are using an active infrared sensor for seat belt detection. The principle behind an active infrared sensor is the transmission and receiving of infrared light. An element known as a light emitting diode (LED) transmits infrared light, which is reflected on the object and received by an optical receiver known as a

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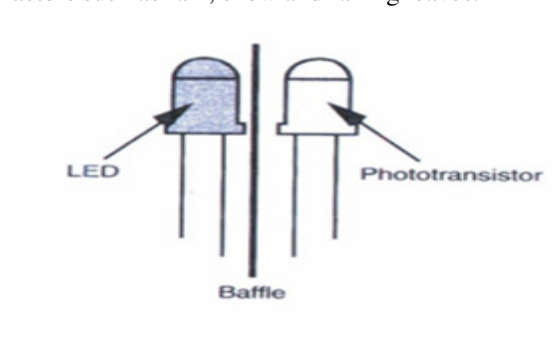
photo diode (PD). As long as there is no movement or object in the path of the light beam, the light pattern is static and the sensor remains in stand-by. Active infrared sensors are generally immune to the effects of external factors such as rain, snow and falling leaves.

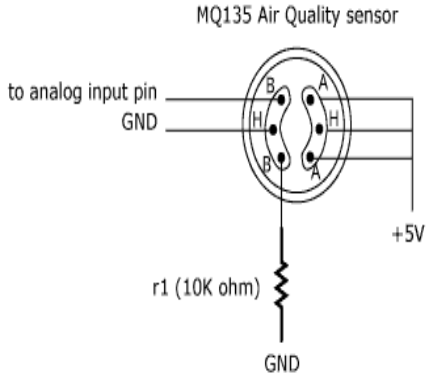


IR Transmitter and receiver

IV. ALCOHOL SENSOR

This alcohol sensor is suitable for detecting alcohol concentration on our breath, just like common breath analyzer. It has a high sensitivity and fast response time. Sensor provides an analog resistive output based on alcohol concentration. The drive circuit is very simple, all it needs is one resistor. A simple interface could be a 0-3.3V ADC.Here we are using MQ135 gas sensor.

Pin diagram of MQ135 gas sensor



V. METAL SENSOR

A Proximitymetal sensor can detect objects without physical contact. It often emits an electromagnetic field or beam and look for changes in the field. The object being sensed is often referred to as the proximity sensor's target. Different proximity sensor targets demand different sensors. For example, a capacitive or photoelectric sensor might be suitable for a plastic target; an inductive proximity sensor requires a metal target.

A proximity sensor measures the current flow between the sensing electrode and the target which provides readouts in appropriate engineering units. Usually, one side of the voltage source or oscillator connects to the sensing electrode and the other side connects through a current-measuring circuit to the target, which is generally a metal part at earth or ground potential.

Inductive proximity sensor

VI. BIOMETRIC SENSOR

Biometrics is the science and technology of measuring and analyzing biological data such as DNA, fingerprints, eye retinas, irises, voice patterns, facial patterns and hand measurements for authentication purposes. Authentication by biometric verification is becoming increasingly common in corporate and public security systems, consumer electronics and point of sale (POS) applications.

A biometric sensor is a device which is used to obtain the necessary verification data from a person. It is an essential component of a biometric system which uses physical traits to identify, verify and authenticate the identity of the user. In fingerprint biometrics application, an optical biometric sensor is employed to produce an image of the ridge structure at a fingertip.

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Fingerprint sensor module (R305)

VII. RELAY

A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two switch positions and they are double throw (changeover) switches.

Relays allow one circuit to switch a second circuit which can be completely separate from the first. For example a low voltage battery circuit can use a relay to switch a 230V AC mains circuit. There is no electrical connection inside the relay between the two circuits; the link is magnetic and mechanical. The coil of a relay passes a relatively large current, typically 30mA for a 12V relay, but it can be as much as 100mA for relays designed to operate from lower voltages. Most ICs (chips) cannot provide this current and a transistor is usually used to amplify the small IC current to the larger value required for the relay coil. The maximum output current for the popular 555 timer IC is 200mA so these devices can supply relay coils directly without amplification. Relays are usually SPDT or DPDT but they can have many more sets of switch contacts, for example relays with 4 sets of changeover contacts are readily available. For further information about switch contacts and the terms used to describe them please see the page on switches. Most relays are designed for PCB mounting but you can solder wires directly to the pins providing you take care to avoid melting the plastic case of the relay.

The supplier's catalogue should show you the relay's connections. The coil will be obvious and it may be connected either way round. Relay coils produce brief high voltage 'spikes' when they are switched off and this can destroy transistors and ICs in the circuit. To prevent damage you must connect protection diodes across the relay coil.

The animated picture shows a working relay with its coil and switch contacts. You can see a lever on the left being attracted by magnetism when the coil is switched on. This lever moves the switch contacts. There is one set of contacts (SPDT) in the foreground and another behind them, making the relay DPDT.

VIII. LCD

An LCD is a small low cost display. It is easy to interface with a microcontroller because of an embedded controller(the black blob on the back of the board).This controller is standard across many displays (HD44780) which means many micro-controllers (including the Arduino) have libraries that make displaying messages as easy as a single line of code.

IX. GSM ARCHITECTURE

The GSM network can be divided into three parts. The Mobile Station carries the subscriber; the Base Station Subsystem controls the radio link with the Mobile Station; the Network Subsystem, the main part of which is the Mobile services Switching Center, performs the switching of calls between the mobile and other fixed or

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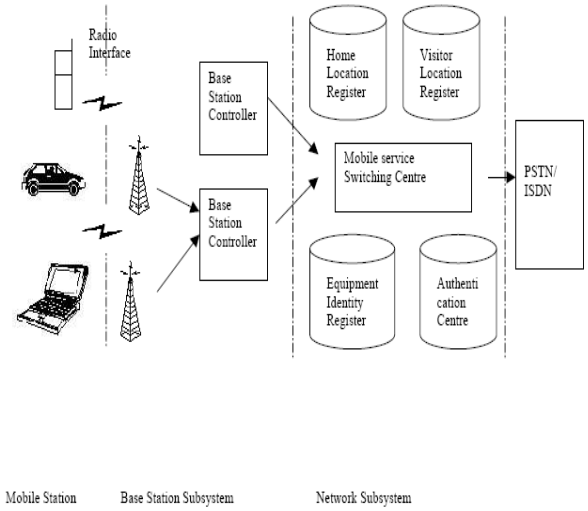
mobile network users, as well as management of mobile services, such as authentication. Not shown is the Operations and Maintenance center, which oversees the proper operation and setup of the network. The Mobile Station and the Base Station Subsystem communicate across the air interface or radio link.



Architecture of GSM

The Base Station Subsystem and the Network Subsystem are also called the fixed network. The registers used are

HLR - **H**ome **L**ocation **R**egister
VLR - **V**isitor **L**ocation **R**egister
AUC - **Au**thentication **C**enter
EIR - **E**quipment **I**dentity **R**egister

X. POWER SUPPLY

Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others.

XI. PIC MICROCONTROLLER

PIC microcontroller from microchip is very popular microcontroller. PICs are easily programmable cheap microcontroller. PICs are the name for the microchip microcontroller family (peripheral interface controller). Consisting of a microprocessor, I/O ports, timer(s), and other internal integrated hardware. a wide range of chip sizes (from eight-pin up), great availability of compilers and source code and easy programming. Flash-type devices are re-programmable in-circuit, whileOTP versions are very cheap to use at the final stage. A wide range of simple programmer hardware and software is downloadable from the net. PIC16f84 seems to be the "standard" for small projects. For the beginner with PICs, a PIC16f84A or PIC16f628 device is a good choice to start with. There are many different varieties of PICs that run at many frequencies, have different memory size, and different internal peripherals. The most famous MCU that microchip produces are: 12cxxx, 12fxxx, 16cxxx, 16fxxx, and 18fxxx.

XII. CONCLUSION

The above input and output analysis of the proposed system proves that the vehicle can be ensured that it is been driven only by the authorized person. The system also provides facility for the learner's license to drive by keeping a licensed person near them. It also gives time to get the system repaired if any malfunction exists. In cars, it also ensures that the seat belt is worn by the driver, so that it adds the safety feature to cars. Though implementation of the proposed system may take time, it would be of great use for the safety of drivers and irregularities can be kept at check without any loopholes.

REFERENCES

[1]. De Vel, O.;Aeberhard, S.,"Line-based face recognition under varying pose". Pattern Analysis and Machine Intelligence, IEEE Transactions on, Volume: 21 Issue: 10, Oct. 1999, Page(s): 1081 1088.

[2]. Pentland, A.; Choudhury, T.,"Face recognition for smart environments ". Computer, Volume: 33 Issue: 2, Feb.2000, Page(s): 50 -55.

[3]. Yongsheng Gao; Leung, M.K.H., "Face recognition using line edge map". Pattern Analysis and Machine Intelligence, IEEE Transactions on , Volume: 24 Issue: 6 , June 2002, Page(s): 764 779.

[4]. W. Zhao, R. Chellappa, A. Rosenfeld, and J. Phillips, "Face Recognition: A Literature Survey". ACM Computing Surveys, Vol. 35, No. 4, December 2003, pp. 399–458.

[5]. Face recognition home page: http://www.face-rec.org/