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***Research Article** (Open Access)*

EMPLOYEES IDENTIFICATION AND TRACKING SYSTEM BY USING SMART GADGET

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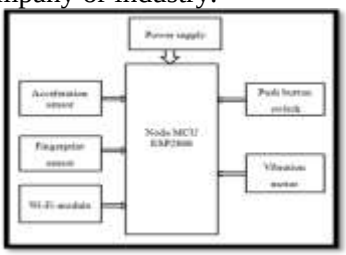
ABSTRACT
In today's world carrying a number of plastics smart cards to establish our identity has become an integral segment ofour routine lives. Identity establishment necessitates a pre stored readily available data about self and to the administrator to authenticate it with employee personal information. **RFID** cards and **Bio-metric** fingerprint systems are not available into a single product and they are passive control devices which consume more power and large space and also generation of signal produces heat in the device. To overcome this problem we come with some new innovative idea that is smart gadget. Our smart gadget consist of **Wi-Fi** module; which is used for tracking an individual, fingerprint sensor for identification, **MEMs** sensor to recognize abnormal condition of employee like **EPILEPSY**, vibration sensor as a reminder and an emergency switch to give alter signal. The principal aim of our project is to propose a viable technological solution for a single multipurpose smart gadget to avoid malfunction or fraud in large companies.

Keywords: *Employee attendance, tracking system, Smart Gadget, Epilepsy*

INTRODUCTION
One takes today a burden of carrying a wallet with full of cards to establish their identity like official, canteen cards, library cards, buspass etc., Smart gadget has a potential to replace all these cards by a single smart gadget to serve the desired purpose. Varieties ofsmart gadgets are available as on date with progressive technologies where developers use different data structure and standards for programming. In this project, we are going to implement the Wi-Fi module with inbuilt Bluetooth, fingerprint sensor MEMs sensor is used to provide information about employees of their abnormal physical behavior, for emergency alter we use vibration mini motor also used as a reminder, where employees can pre store their medical data into a gadget and vibration motor will remind them on a fixed time to do their activities such as taking pills or food/water etc., for improvement of old attendance and tracking system for better results and security of employee in company or industry.



TRANSMITTER
Fig.1 Block Diagram of Transmitter

PROPOSED SYSTEM
It is an active modedevice and it covers large area. It is a compact and portable gadget with Inbuilt Wi-Fi and Bluetooth. This gadget consumes less power. LAN, IoT are used to share employee data through Wi-

Fi. In this gadget we used Electronic control technology. Our gadget does not require pairing with modem.

Transmitter side of gadget includes some component such as power supply, acceleration sensor, push button, vibration motor, fingerprint sensor and Wi-Fi module. These components are connected to the node MCU ESP8266 Wi-Fi module.The Wi-Fi module used is ESP-12E module. The development board equips the ESP -12E module containing ESP8266 chip having Tensilica, Xtensa 32 bit LX106 RISK microprocessor which operates at80 to 160MHz adjustable clockfrequency and support RTOS.

The ESP8266 integrates 802.11b/g/n HT40 Wi-Fi transceiver, so it can not only connect to a Wi-Fi network with the internet but it can also setup a network of its own, allowing other devices to connect directly to it. This makes the ESP8266 node MCU even more versatile.

MULTIPLEXED I/OS contains ADC channels, UART interfaces, PWM outputs and SPI I2C & I2S interface.

SWITCHES AND INDICATORSused in this gadget are RST-Reset the ESP8266 chip, FLASH-Download new programs and Blue LED user programmable.

SERIAL COMMUNICATION

The board includes CP2102 USB-to-UART Bridge controller from silicon labs, which converts USB signal to serial and allows your computer to program and communicate with the ESP8266 chip.

POWER REQUIREMENT

As the operating voltage range of ESP8266 is 3 volt to 3.6 volt, the board comes with a LD0 voltage regulator to keep the voltage steady at 3.3 volt. It can reliably supply up to 600mA, which should be more than enough when ESP8266 pulls as much as 80mA during RF transmission.

RECEIVER

The below diagram shows the receiver of the smart gadget it consist of two components such as Wi-Fimodem and controller system such ascomputer, laptop, tab etc.

Each gadget contains a unique identification code called an electronic item code (EPC), which is used to verify and recognize the individual's location and send this data to controller system

When employee is absent or not presents at allocated area then Wi-Fi modem verifies and send data as absent to the controller.

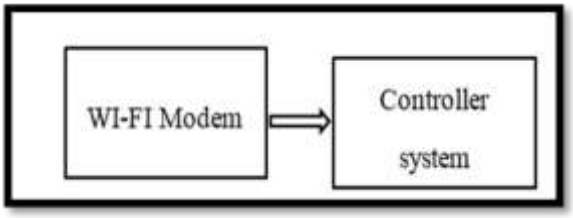


Fig.2a Block Diagram of Receiver

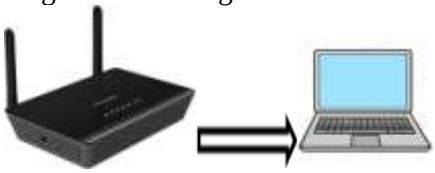


Fig.2b Process diagram of smart gadget at receiver side.

Node MCU ESP8266 Node MCU ESP8266 is a single combined device that translates internet data packets via the modem and sends it through wirelessly to devices in industries/companies via the router. Another term for this device is a gateway. It is able to connect to a wireless network as provided by an ISP. When you connect to your computer a wireless modem you can now have access to internet when a signal from you ISP is present. WI-FI routers can connect to LANS or WANS, LAN and WAN, or LAN and the internet

Fingerprint scanners-TTL (GT-521F32) are security system of bio-metrics. They are now used in police stations, security industries and most recently on computers and mobile phone.
Everyone has marks on their fingers they cannot be removed or changed. These marks have its patternand this pattern is called the fingerprint. Because there are countless combinations of fingerprint have becomes an ideal means of identification
An accelerometer is an electro mechanical device that measures both static (gravity) and dynamic (motion/vibration) accelerations. The development of MEMs (micro-electro-mechanical) technology has revolutionized the original accelerometer applications making them smaller, lower power and more accurate.
An eccentric rotating mass vibration motor(ERM) uses a small unbalanced mass on a dcc motor when it rotates it creates a force that translates to vibrations. A linear resonant actuator(LRA) contains a small internal mass attached to a spring, which creates a force when driven. It is a compact size coreless DC motor used to informs the users of receiving the signal by vibrating, no sound, vibration motors are widely used in variety of applications including cell phones, handsets, pagers, and so on
A push button switch is a small, sealed mechanism that completes an electric circuit when you press on it. When it's on, a small metal spring inside makes contact with two wires, allowing electricity to flow when it's of, the spring retracts, contact is interrupted and current wont flow.
All **LITHIUM - ION BATTERY** work in broadly the same way. When the battery is charging up, the lithium-cobalt oxide, positive electrodes gives up some of its lithium irons, which moves through the electrolyte to the negative, graphite electrode and remain there.

AT RECEIVER:
WI-FI MODEM:
TP-LINK's TD-W8961N 300Mbps wireless N ADSL2+Modem Router is an incredibly robust all-in-one device that provides a full rate of ADSL2+standard with the superb reliability and a cost effective solution for home and small business. With the TD-W8961N, you can easily create a secure wireless network and share high-speed internet connection while access to share files, music, photos and printers with multiple computers.
SYSTEM MODULE

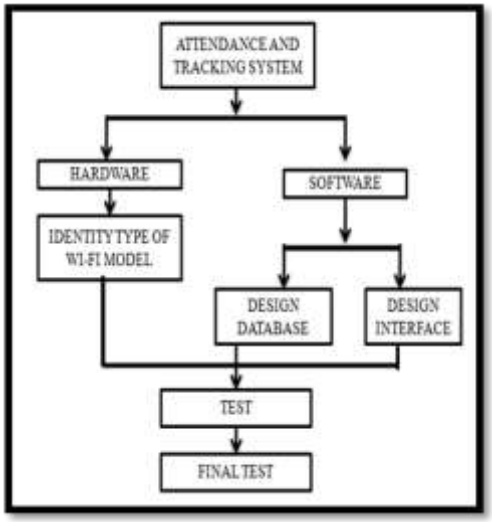


Fig.3. system flow diagram of smart gadget

Finger print sensor is used to scan the impression of fingers of employee and send the data to node MCU ESP8266 to compare with pre stored data, if pre stored data is not matched then it will not put presence to the particular employee.

One-Stop Solution:
The TD-W8961N does the work of several networking devices packed into one sleek device. With an ADSL2+modem, NAT router, 4-port switch and 300 Mbps wireless N access point , this device eliminate the need to purchase multiple devices to access and share a high–speed internet connection.

RESULT AND DISCUSSION

1st switch
This switch is used for first time enrolment of employees fingerprint into gadget**.**

Fig.4. pressing 1st switch

2nd switch
This switch is used for verification of employees fingerprint and put attendance. They have to press their finger every time while they are entering into the company campus.

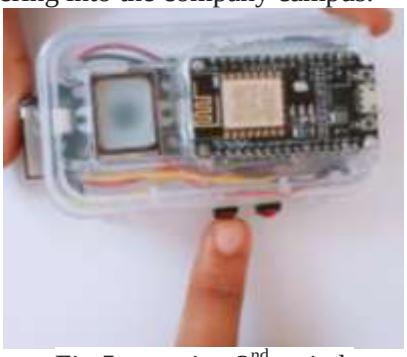


Fig.5. pressing 2nd switch

3rd switch
Emergency switch
This switch is used to send an emergency alert signal to the controller while an employee physically not well.

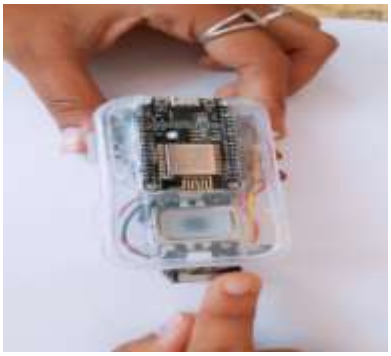


Fig.6. pressing emergency switch

Fingerprint scanner

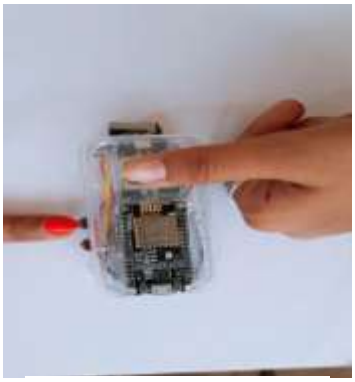


Fig.7. Fingerprint scanner

Every day while entering into the company, employee should leave their impression on fingerprint thumb scanner to enable the gadget and give presence.

CONCLUSION

In this project, smart attendance and tracking system is done by using Wi-Fi module and fingerprint sensor. The transformation of information can be delivered without a hitch. This system is used for tracing of employee in company/industry. The system can reduces manpower. Our system is very easy to handle and very convenient for company/industry level. This system gives time saving, easy control and reliability and accuracy.

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