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Smart Attendance System

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Abstract: ***The combination of Electronics Engineering and Information Technology is played a significant roles in developing several aspects in academics such has in students attendance monitoring. Taking attendance manually often time consuming process which also increased mistakes and false in the attendance so overcome this situation we make this project Smart Attendance System.***
In this project, we will learn how to build IOT based Smart Attendance System using NodeMCU ESP8266 12E, OLED Display and Finger print module R608. we have also created database to register the student fingerprint in database. The system works in such a manner that when we put our finger on the sensor, which would scan their finger print and send the data to the NodeMCU.
The NodeMCU would then compare the finger print data with the stored database and mark the attendance in the dashboard. Implimented system will improve the accuracy of attendance recording due to biometric features and also save the time of teacher during the lecture.
Keywords: NodeMCU ESP8266, Fingerprint, OLED, Website

I. INTRODUCTION

The attendance of student in the class is very important task. Many of educational institutes are taking the attendance manually in the class using the attendance register daily. Teachers marks “P” or “A” in the attendance registered by calling roll number in the class at the end or the start of lecture.
This process consumes more time to process and also students can give proxy on other’s roll numbers. We all know everyone in the world has unique characteristics of human being is not changing after their growth also. So far aacurate information about the user we use this identification factor.
Use of this biometric feature the attendance places correctly without malfunctioning, which increases accuracy and transparancy in the attendance.
By considering this need we have proposed an implemented project is IOT based Smart Attendance System. Which we design portable device includes fingerprint scanner and WIFI connectivity.
This device we circulate in classroom in the lecture to take the everyones fingerprint for the identification. The captured fingerprint convert the data in binary format and compared with the predefined data store in the database and the attendance of student mark with their entrollment id.

II. METHODOLOGY

The initialization and initialization of the system is done by hardware installation and software installation separately. the hardware connection can be made in a bread board by connecting wire . the OLED display finger print sensor is interfaced with NodeMCU ESP8266 board.
These I2C of OLED display the SDA SCL are connected to NodeMCU D2 D1 pins respectively. The finger print sensor is connected to UART pins D5 and D6 .The fingerprint Tx and Rx wire’s color may vary
For IOT based smart attendance system first, we created the database with the multiple tables including Student id, Serial number, Gender, Finger id, Date, Time in.

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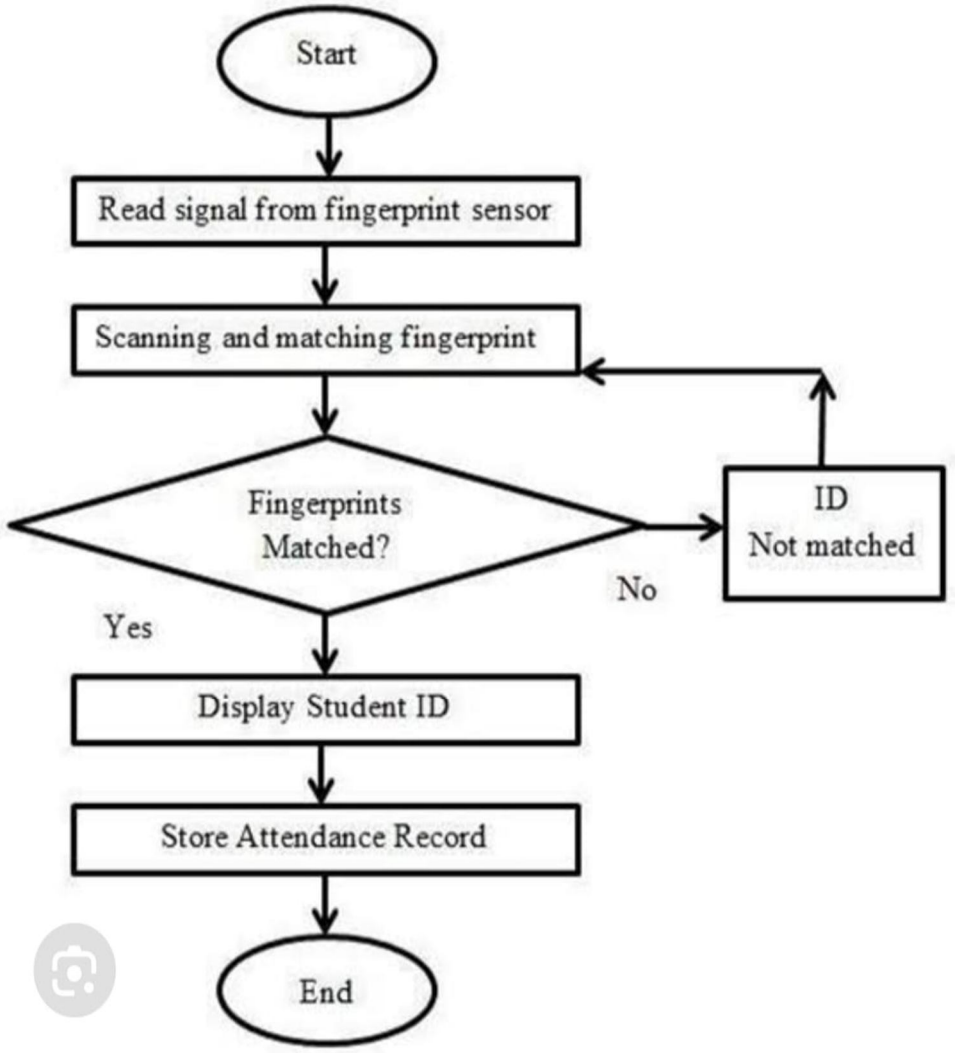


Fig .1 Flowchart

III. MODULES

A. Fingerprint Sensor

TTL UART interface the user can store fingerprint data in the module and can configure it in 1:1 or 1:n mode for identifying the person.The fingerprint module interface with 3.6v



Fig. 2 Finger print sensor

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B. NodeMCU

NodeMCU is low cost open source IOT platform .NodeMCU is used which is a high speed and accurate object connector. It has an onboard optical sensor to capture the images, internal 32 bit processor that process the capture image and make it in a stream of bits and stores it in an on board memory . the memory can save up to the 227 different fingerprints.



Fig.3 NodeMCU

C. OLED Display

OLED is next generation display that is thin ,lightweight ,low power consumption,and has excellent contrast and responsiveness .OLED emits light by conducting electricity to thre organic materials that are sandwiched between the electrodes.



Fig.4 OLED Display

IV. CIRCUIT DESIGN

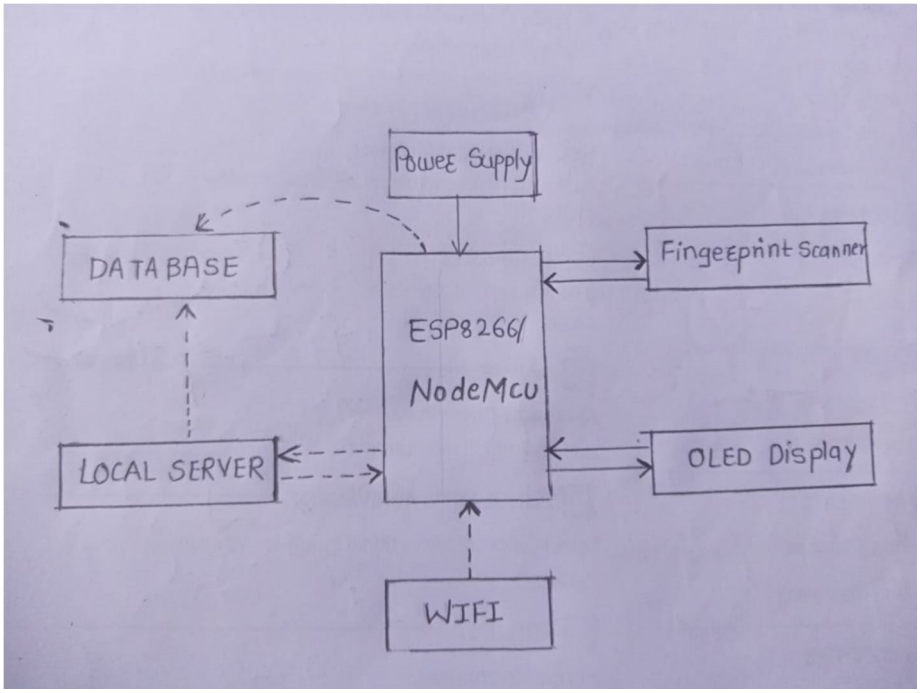


Fig.5 Block Diagram

We have proposed IOT based smart attendance system .The proposed system in shown in Figure .5,which consists of portable devices having NodeMCU ESP8266, R608 Fingerprint scanner , OLED display.
The R608 fingerprint sensor reads the fingerprint from user and sends it to ESP for verification and matching, ESP will check the data from the server. All these process will happen in the back-end of the system. User can operate the system from the front-end which will be a graphical user interface of the system. From the dashboard of the system, user will be able to perform various actions such as a selection User, User log and Manage users. Once the attendance is recorded we also can download the attendance in the pdf format.

V. PRACTICAL IMAGE

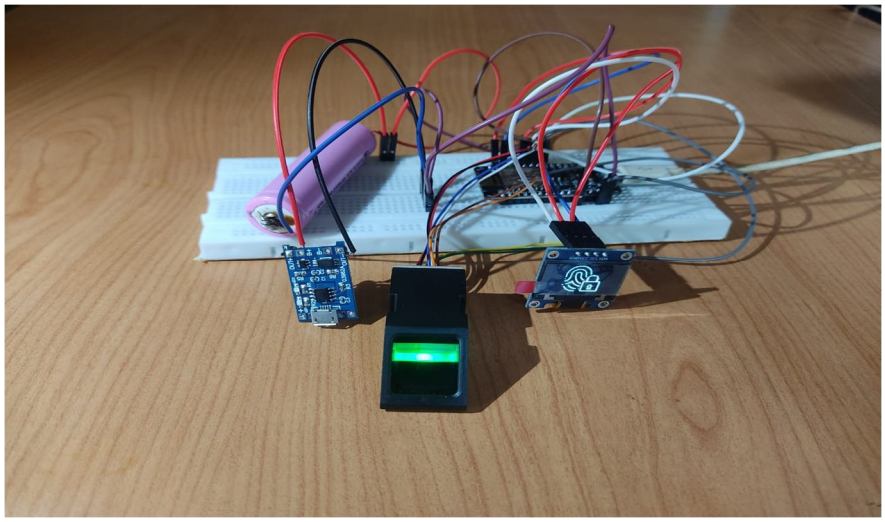


Fig.6 Practical Implimentation

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VI. WEBSITE DESIGN

The website uses the PHP file ,which as a database and record of attendance, we login into the website and mark the attendance and you can collect the all attendance record of each other.

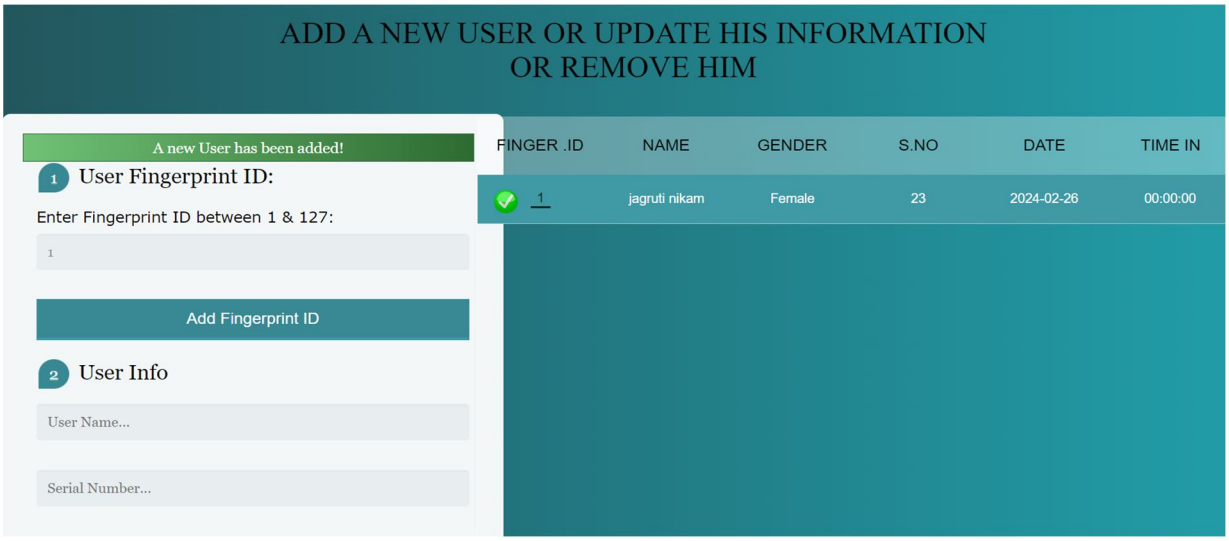


Fig 7.Ragistration Process

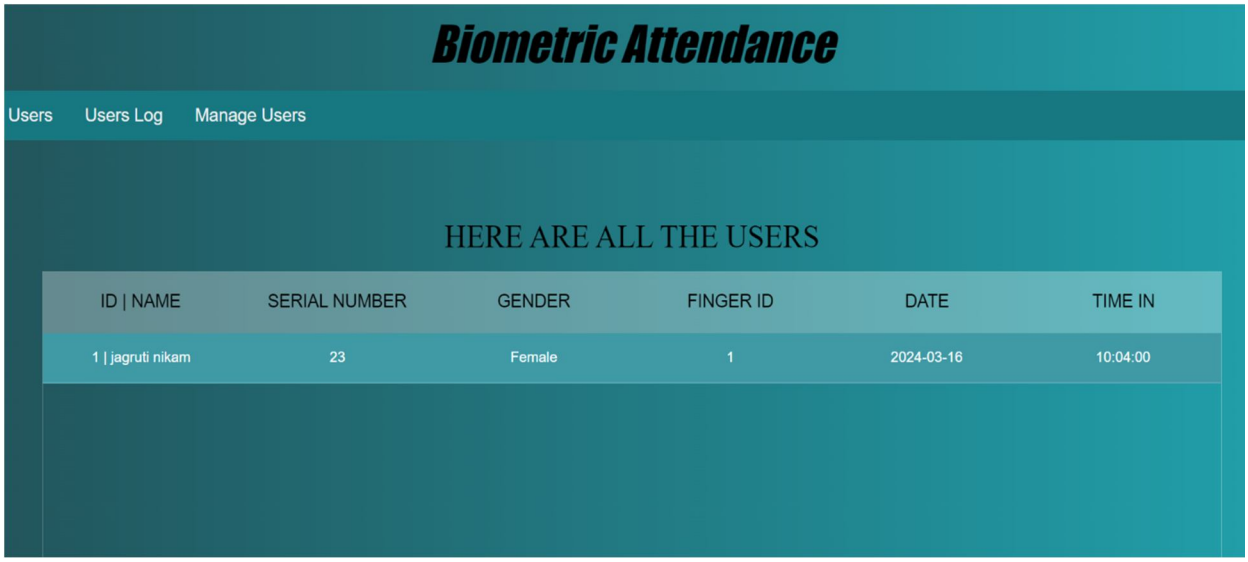


Fig.8 After Registration

VII. CONCLUSION

An smart attendance system aims at solving the issue of manual methods of existing system. This project of smart attendance system based on ESP8266 wifi module smart ID card and finger print sensor for two factor authentication has been created .The concept of smart attendance is to implement a system that makes the attendance of a particular person within a range of classroom in limited time period. We have made the device portable for easy use even when the session are on.

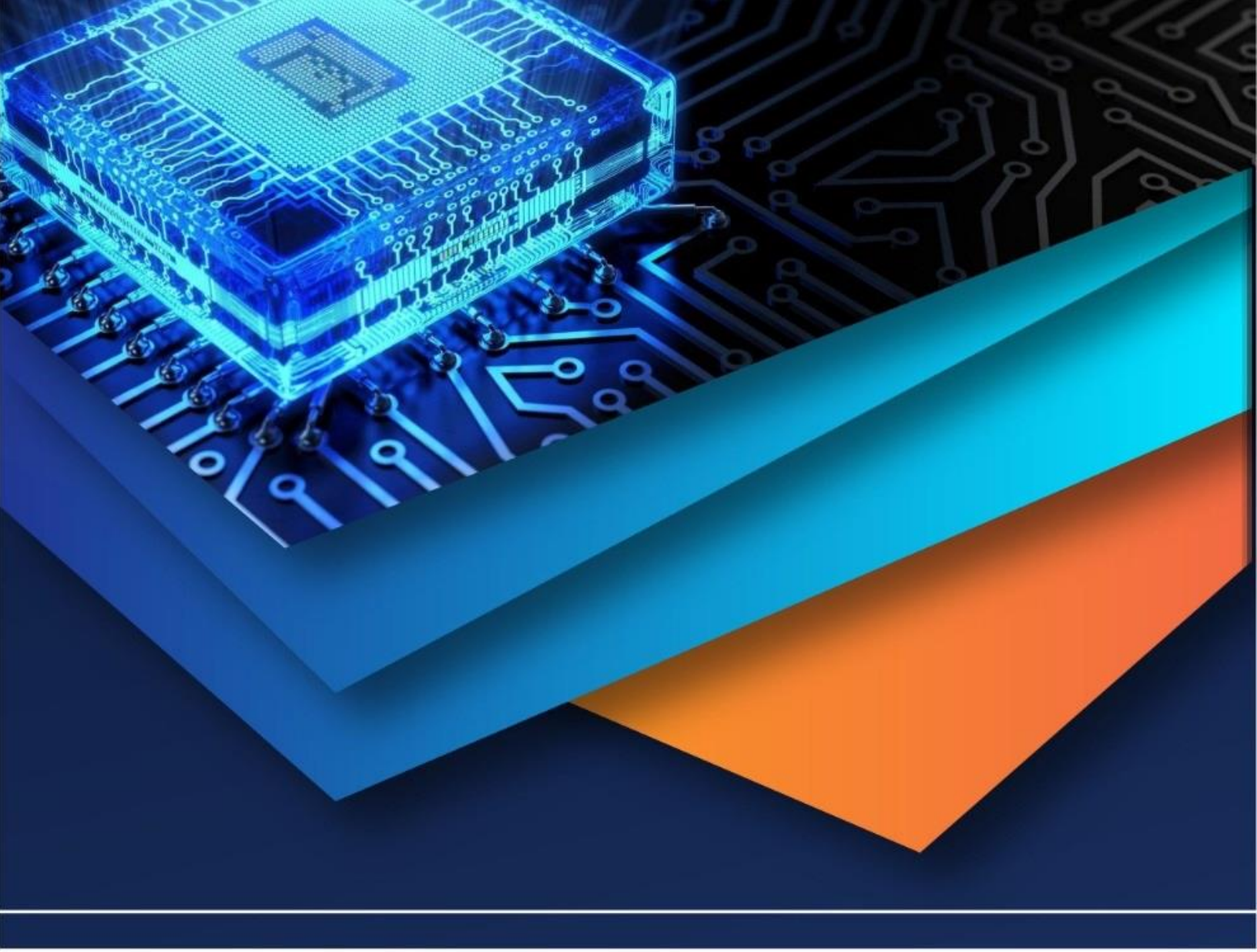
VIII. FUCTURE SCOPE

Expanding the system to communicate with other IOT devices in the environment , such as smart locks for secure access control or temperature sensor for attendance in specific environments like classroom or offices. Also we can keeping upwith advancements in biometric technology, such as vein pattern recognition or heartbeat detection , to further improve the accuracy and reliability of the attendance system.

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