

Palm Print Database Collection System

Miss. Shivani Dhatkar, Miss. Suvarna Thorta, Miss. Gauri Bharte, Prof. N. D Kapale

Department of Electronics & Telecommunications Engineering
Sanjivani College of Engineering, Kopergaon, India

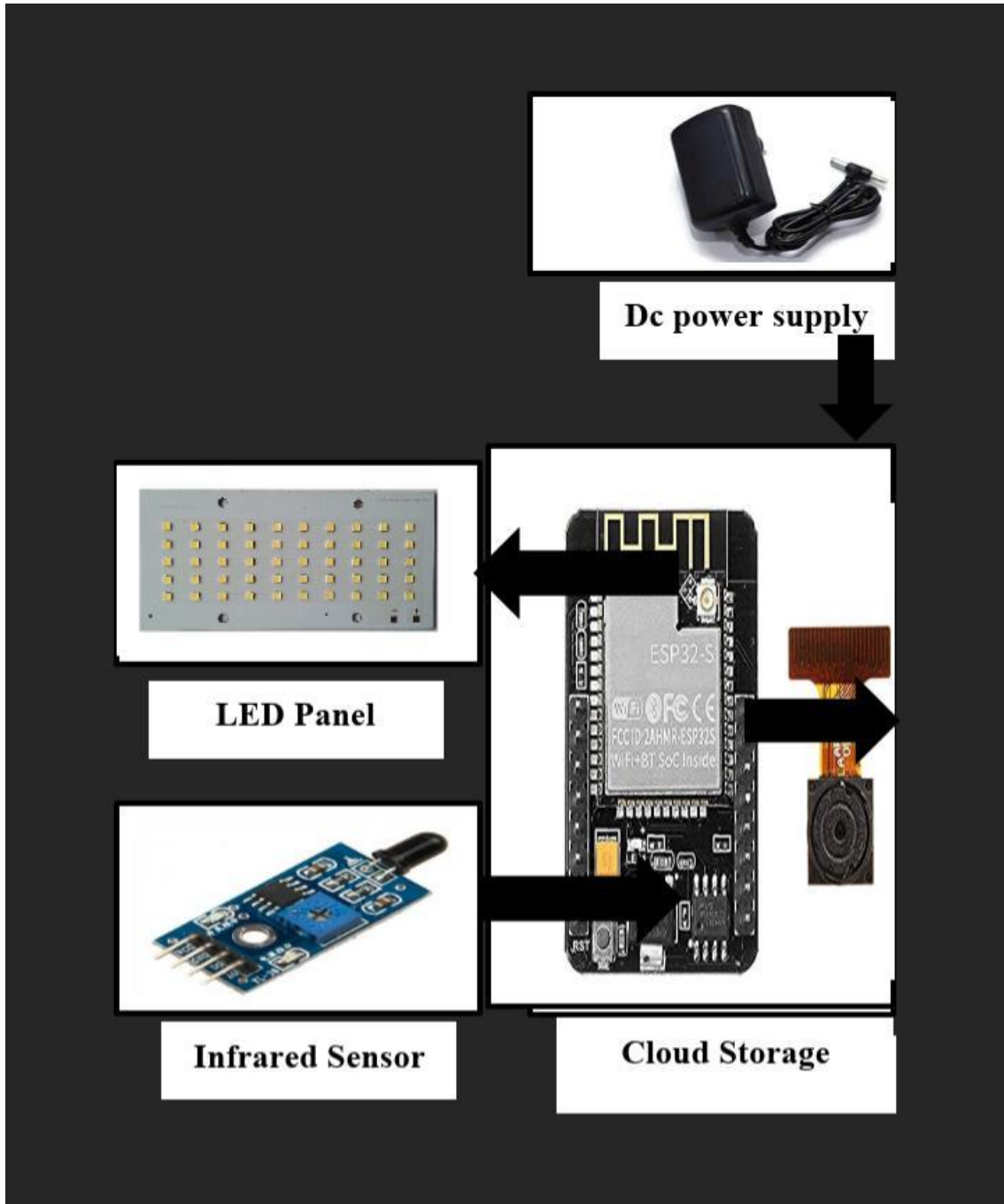
Abstract: *Contactless biometric palm print recognition technology has attracted increased attention due to the covid-19 pandemic. Many dual camera based sensors have been proposed to capture palm vein and palm print image synchronously. However, translations between captured palm print images differ depending on the distance between the hand and the sensor. A biometric palm image Alignment method is proposed based on the imaging and ranging model. A palm print refers to an image acquired of the palm region of the hand. Palm print image enhancement is required for better feature extraction. To extract fine features enhancement is required. Fine features increase the accuracy of palm print recognition system. The main purpose of this review paper is to study and compare various palm print recognition techniques in terms of performance, accuracy, overheads and Peak Signal to Noise Ratio (PSNR).*

Keywords: Biometric, Authentication, Palm print identification, verification

I. INTRODUCTION

PalmPrint recognition is a biometric technology which recognizes a person based on his/her palm print pattern. Palm print serves as a reliable human identifier because the print patterns are not duplicated in other people, even in monozygotic twins. More importantly, the details of these ridges are permanent. The ridge structures are formed at about thirteenth weeks of the human embryonic development and are completed by about eighteenth week (C. Harold and M. Charles, 1943). The formation remains unchanged from that time on throughout life except for size. After death, decomposition of the skin is last to occur in the area of the palm print. Compared with the other physical biometric characteristics, palm print authentication has several advantages: low-resolution imaging, low-intrusiveness, stable line features and low-cost capturing device. Currently, most of the palm print biometrics utilize scanner or CCD camera as the input sensor. The users must touch the sensor for their hand images to be acquired. In public areas, like the hospital especially, the sanitary issue is of utmost importance. People are concerned about placing their fingers or hands on the same sensor where countless others have also placed theirs. This problem is particularly exacerbated in some Asian countries at the height of the SARS epidemic. Besides, latent palm prints which remain on the surface could be copied for illegitimate uses.

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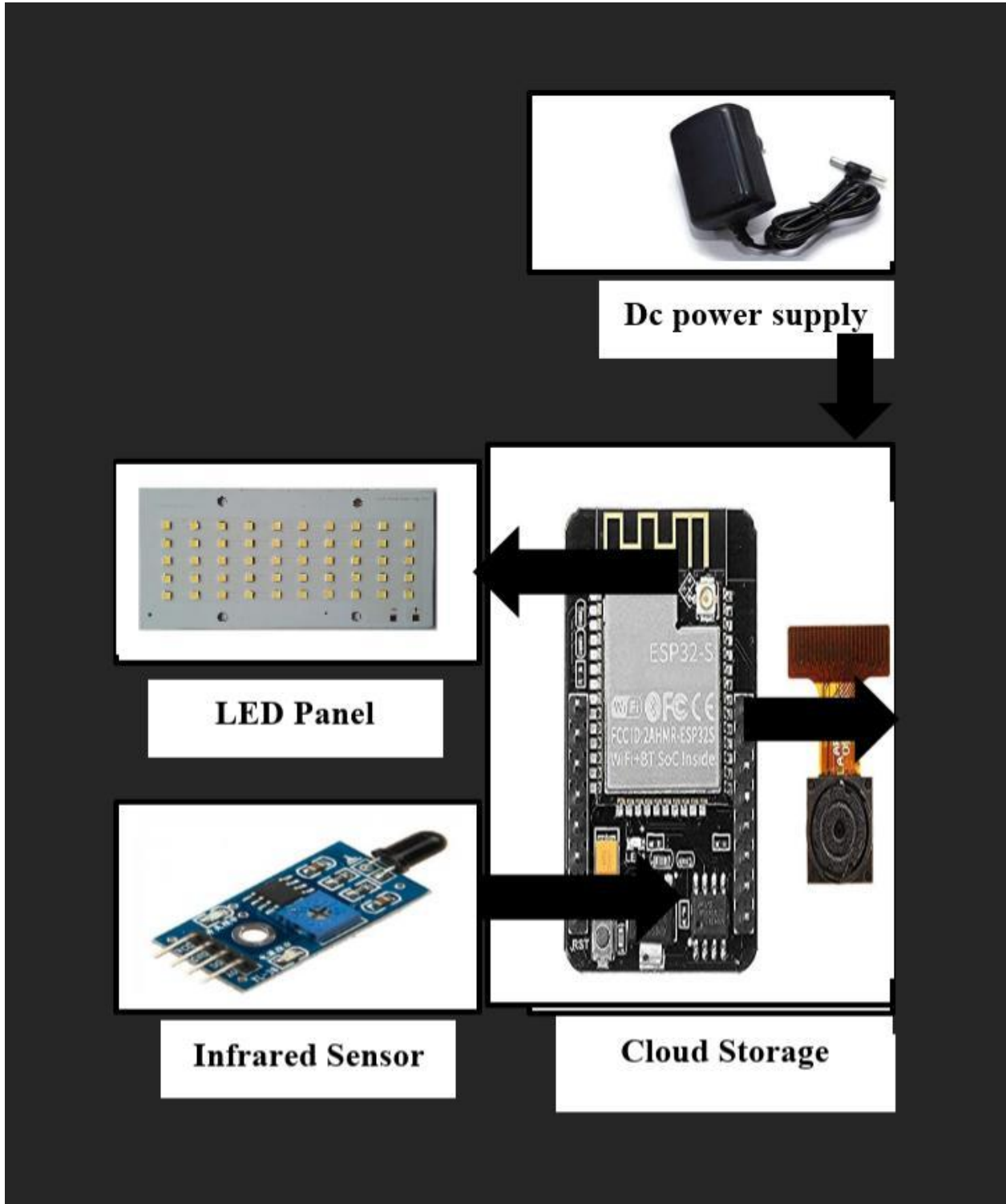


Fig. No. 1.1 Block Diagram

System Specifications:

Scale up to 10 cm

Illumination at ambient light : 10-20 lumens

Time taken for capturing image : 2 msec

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No. of images: 100

Input & Output Specification

Hardware Specification :

1. Node MCU



2. IR Sensor



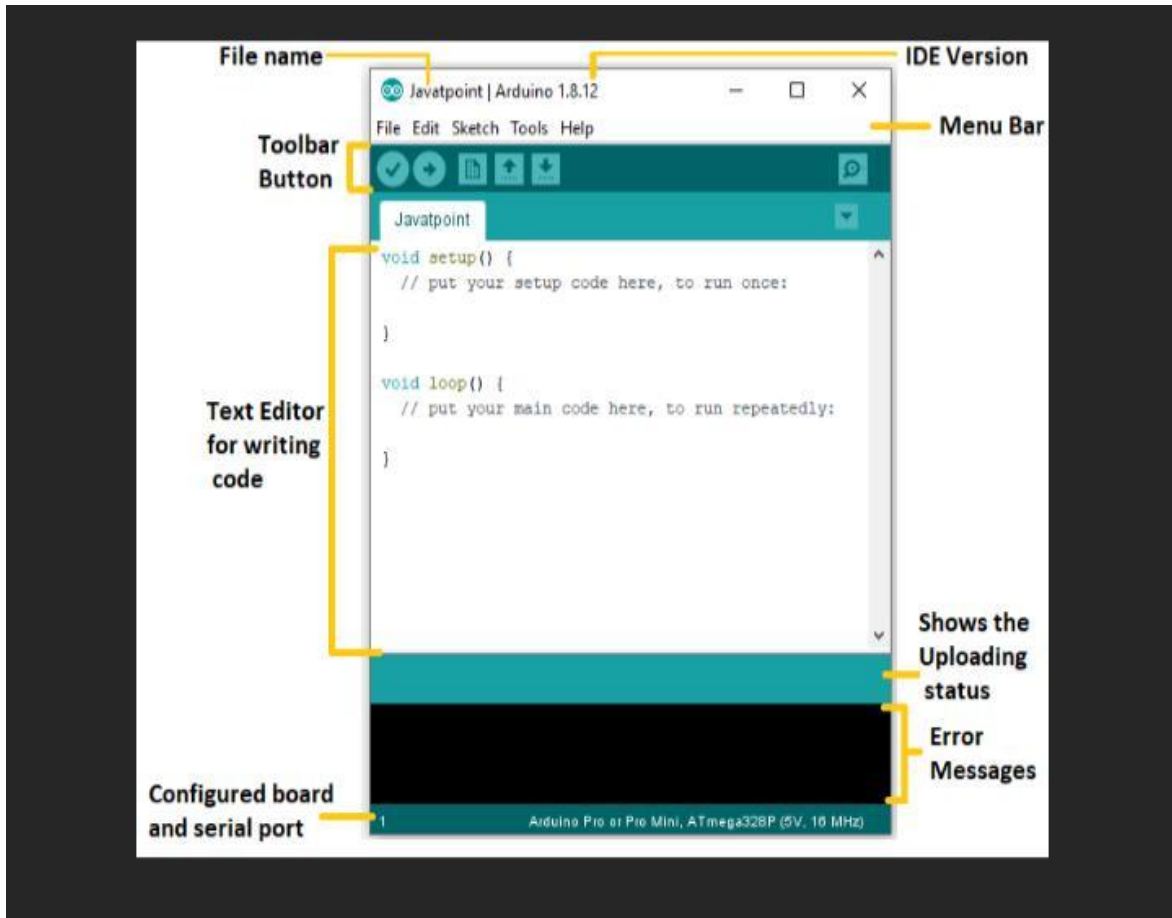
Software Specification:

- Arduino IDE
- Open Source
- Working OS Windows, Linux, mac, OS
- Arduino IDE 2.0.3
- C, C++

II. SOFTWARE DESIGN

Arduino IDE

The Arduino IDE is an open-source software, which is used to write and upload code to the Arduino boards. The IDE application is suitable for different operating systems such as Windows, Mac OS X, and Linux. It supports the programming languages C and C++. Here, IDE stands for Integrated Development Environment. The program or code written in the Arduino IDE is often called as sketching. We need to connect the Genuino and Arduino board with the IDE to upload the sketch written in the Arduino IDE software. The sketch is saved with the extension ‘.ino.’



Advantages:

- A typical palm print-based identification system involves pre-processing, feature extraction, feature matching and decision-making.
- Palm print has relatively stable and unique features.
- Collection of data is very easy. It provides high efficiency using low resolution images.
- High performance
- User-friendly
- Highly stable

Disadvantages:

- Issues with recognition of damaged fingerprints: There is a lack of flexibility to identify the person in case of a cut or wound or when fingerprints are smudged with dirt or grease.
- Fingerprint sensors are sensitive, which works in their favor if the fingers are clean.
- Quality of images, a person can leave the palm print everywhere. Can create artificial gummy palm.
- Not ideal for remote and field workers.

III. APPLICATIONS

- Palm prints can be used for criminal, forensic, or commercial applications.
- Palm prints, typically from the palm, are often found at crime scenes as the result of the offender's gloves slipping during the commission of the crime, and thus exposing part of the unprotected hand.

- Research has found that palm print recognition can be applied to areas such as Identity verification and identity recognition,
- Time and attendance systems,
- Personnel access management applications.

IV. CONCLUSION

Palmprint Recognition accuracy depends on the number of imprints stored in the database for each person. The dissertation "Palmprint Recognition" has great contribution in biometric verification systems. By implementing our new step we have refined the matching by 3.67%. The primary characteristic of our algorithm is that it uses relatively stable global characteristics to combine the broken curves in principle lines, which may look like the human behavior when comparing two palm prints. As a result, the errors of misalignment, which often occur in a recognition system, are dramatically decreased, resulting in better verification performance. The main advantage of our proposed algorithm is that the some invalid curve structures creating invalid matching are eliminated by considering conditions of false matching. The procedure filter_out eliminates these invalid curves.

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