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Health Monitoring System Based on Foot Print using High End Processor

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Abstract: ***Biometrics is used for identification in this article. This paper also describes how biometrics can leverage the boundless computational resources of the cloud and the striking properties of flexibility, scalability, and cost reduction to reduce the cost of the biometric system requirements of different computational resources (i.e. processing power or data storage) and to improve the performance of the processes of the biometric systems (i.e. biometric matching). The human footprint is known to have the new characteristics that could be used to identify the criteria for determining an individual's identity. The main objective is to develop image processing algorithms capability on a limited computing platform. We created the embedded framework that recognizes and accepts a person's identity. The paper's main purpose is to update the characteristics of the details, needs, and reports of the patient behind the implementation of a real-time base system. The foot picture of the human is segmented, and its key points are placed. The foot is arranged and trimmed, clipped according to key points, created and dimensioned. Colour establishes a crucial role in numerous footprint recognition applications. Due to the drawback of real-time software and Raspberry Pi technology, this effort based on lightweight methodology was primarily used.***

Keywords: Raspberry pi, an automated biometric feature from the footprint, personal identification.

I. INTRODUCTION

The biometric device is a pattern-recognition system that identifies a person based on a characteristic matrix extracted from specific biological characteristics such as fingerprints, hand morphology, ear patterns, eye patterns (iris and retina), facial characteristics, and other physical properties. Various biometric concepts and methods are coming from different perspectives in this period of human identity and authentication. Several elastic approaches are being established in automatic biometrics-based authentication, utilizing specific biometric attributes of the person: uniqueness and individuality. This area is becoming a new and emerging solution to access control in wellness areas. Automated biometrics-based recognition has not been established for realistic methods for unconstrained topics. The main problem with automated personal identification is how highly reliable the sampled approach can be explained against the recorded function. The comparison of images occurs in each section of the image divisor. A camera-focused image is stored in the database that can be done using the SQL language.

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After the image is captured it is split into several layers of partitions. Every layer has different measurements, and the thickness is set by the mathematical divider algorithm. The image that is compressed into partition layers is transformed into a duplicate image that maps the outer path of the image and mounts the view in the next layer that can be guided to the next treatment area. In the future, artificial intelligence plays a major role and it does all the job where the person can do it through the human's power of thought. In the new Google has introduced the lens capable of capturing the particular object, showing the results of the same item and the associated object available on the market.

II. LITERATURE SURVEY

Amin Azmoodeh et., al., Ali Dehghantanha et., al., proposed an Internet of Things (IoT) architecture generally consists of a wide range of internet-connected devices or things like Android devices, and devices with more computational capabilities (e.g., storage capabilities) are likely to be targeted by authors of ransomware. In this paper, they present a machine learning-based approach to detect ransomware attacks by monitoring the power consumption of Android devices. Specifically, the proposed method monitors the energy consumption patterns of different processes to classify ransomware from non-malicious applications. Then demonstrate that the proposed approach outperforms K-Nearest Neighbors, Neural Networks, Support Vector Machine and Random Forest, in terms of accuracy rate, recall rate, precision rate and F-measure [1].

Wanlop et., al., proposed the disease can be diagnosed by using the method of foot analysis. In which it uses the technique of image processing to capture the footage prints. The footprint may differ from one person to another from an accurate result. The footprint of the individual can be captured and stored in the database. After capturing the foot data, several processes may involve data acquisition, data collection, Foot structure prediction, data analysis. Use the indication for the separation of data each method can use a different type of indication. Normally the satheli arc index, clerk angle index, chippaux-Smirak index these various methods that can capture the footprint and predict the health issue. This paper proposes, in particular, the classification of images based on the indication. The range of indications can be used to separate the right foot from the left foot. The data set can be collected by nearly 145 footprint images. They use indicators to compare and predict the accurate image when they want to compare images with the database. Based on the experimental result, the satheli arc index can show an accuracy of about 92 percent and the clerk's arc can show an accuracy of about 84 percent and the chippaux-smirak can show an accuracy of about 78 percent. [2].

S. Jun et., al., proposed several devices that have been introduced to predict human walking patterns.

If the person is affected by the disease, it can be analyzed by walking. This paper proposes ultra-wideband foot wearable devices to monitor the human foot structure. The data being monitored are updated by the antenna receiver and the transmitter signal. The data 3D printing technology system is used to test the propagation of the antenna.

The Flux filament manufacturing system is used for this method. Ploy lactic plastic is used for the data propagation method of antennas. The data input should be within the 10db range, which can be compared to the 1.2GHZ – 8.5GHZ frequency range. The frequency range can be formulated when the devices are installed in the human body. Simulations are made at a specific frequency range that can give the exact result. [3]

Rohit Khokher et., al., proposed the use of Principal Component Analysis (PCA) and Independent Component Analysis (ICA) linear projection techniques for the biometric identification of the person by collecting texture and shape-based features. PCA is a method generally used for data sorting and dimensional reduction, and ICA is one of the most frequently employed. Blind source separation techniques for identifying hidden factors that underlie random variables, measurements, or signal sets. [5].

III. PROPOSED METHOD

A new technique can be found using manual foot measurements for accurate human identification. The methods used in these techniques are image processing, extraction features, and pattern recognition. A key requirement for this technique is a high-definition foot image instead of a poor-quality image. The abstract features of the foot are determined by determining the center of the foot by measuring between the center and the outer points of the toes. The geometric structure of the foot is generated by the angle of the result and the distance between the two points. The center point of each toe is determined by the length between the center and the bottom of most of the foot. The captured image may be subject to several processing stages of data acquisition, data collection, and foot structure prediction. Based on the footprint results, the patient's health problems can be predicted. The python language and the raspberry pi kit are used here. This method can provide an accurate result of about 78%. To proceed with this method, we need to decide how many bits are the same for two patterns based on whether or not we can infer that it is from the same source.

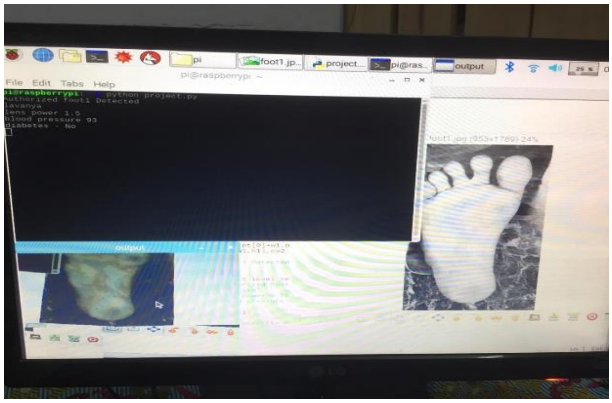

Fig 1: Screenshot of footprint execution using raspberry pi

IV. RESULTS AND DISCUSSIONS

Throughout our proposed system, we must examine the person's footprint. The input foot image is taken by a raspberry pi camera that is connected to the system. The provided input foot image will undergo a pre-processing step. The input picture will first be in RGB mode and must be translated to a grayscale. Then the dimension of the input picture is modified. Generally, the input picture will not be clear as the presence of noise will be very high. So first we need to remove the noise that is done with the help of a median filter. The method of comparing the input image and the recorded images takes place. The final stages are segmentation and grouping. At the segmentation stage, the contaminated portion will be segmented and the form of infection will be shown at the classification stage.

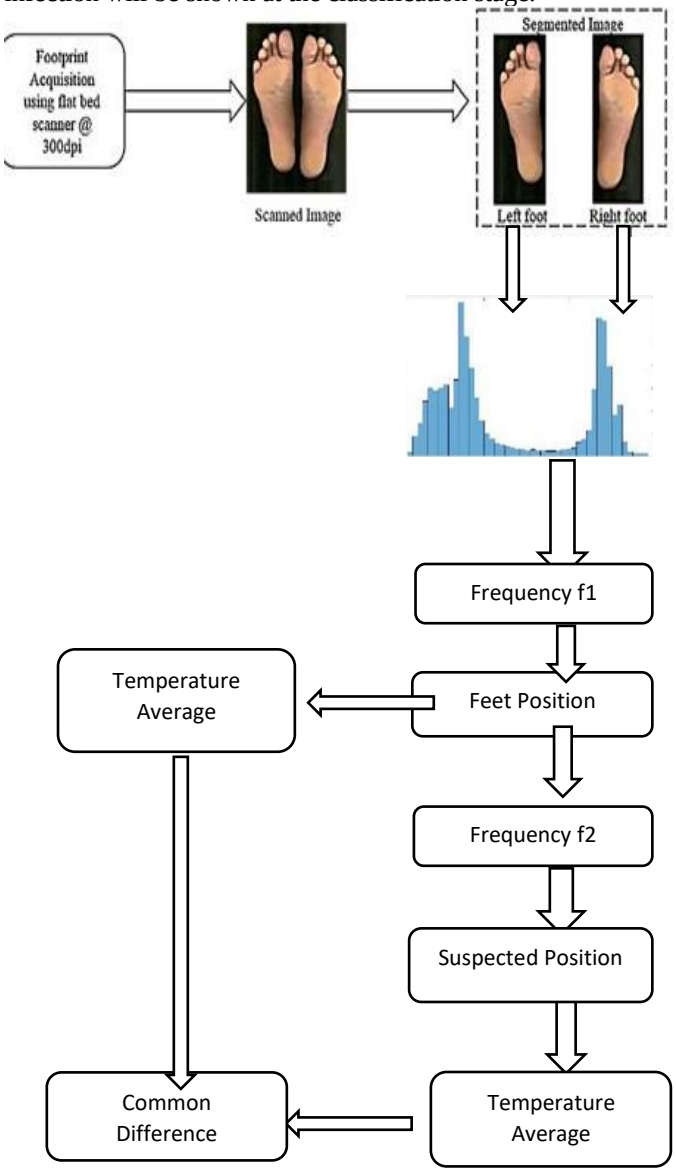

Fig 2: Flowchart

V. CONCLUSION

Throughout recent decades, a wide range of biometric features has been identified and evaluated. In this research, we suggested a system of personal identification centered on footprint and checked its efficiency by evaluating the output and connection parameters of the individual footprint. The results show that there is good accuracy to be used for the biometric system. It is obvious that higher precision is needed for commercial applications and for prospective outcomes for the larger population. The drawback of this analysis is that all interventions have been performed with the participant in a standing position. During the gait, the metrics may be specific, although it may not be easy to determine each of the variables under complex conditions. The proposed approach has the advantage that it does not require any special hardware to capture footprint images, and the study is based solely on the captured image. Despite extensive human foot research studies in the area of medical and forensic science, its use in the commercial biometric method is perceived to be difficult because data acquisition is user-friendly or unknown.

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