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A Blood Group Determination using Fingerprint

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Abstract*: Fingerprint patterns highlight the most authentic and unique distinctive human identity. This unique pattern is unchangeable and remains unchanged until the death of an individual. Fingerprint evidence is highly visible in various circumstances, especially in court proceedings. While the distinctive fields of all people are unprecedented, the likelihood of similarity is very low, at almost 66 million. This difference also applies to the same replica. The individualistic comb pattern remains unchanged from birth and serves as a constant aspect of personal identity. This article presents a method that involves comparing specific feature patterns from fingerprints in personal identification systems. Fingerprint data is also used when examining blood type measurements. During the fingerprint adjustment process, the frequency of the comb is evaluated and spatial features are extracted with Gabor filters for this particular purpose. As a result, blood type determination can be performed using fingerprint analysis*

Keywords: Blood type determination, fingerprint pattern, comb frequency, Gabor filter, folding net

I. INTRODUCTION

Detection of blood types with fingerprints is an innovative, non-invasive approach that combines biometric authentication technology with medical information. This method uses unique patterns found in individual fingerprints to determine blood type. This is important medical information for members of health professions. This concept is based on the idea that certain proteins or antigens associated with different blood types can determine sweat. This can be seen on ridges and grooves in a person's fingerprint. Traditional methods for determining blood types include blood tests that can become uncomfortable and may contain needles. However, detecting blood types with fingerprints makes the process more convenient and less invasive [1]. This technique can optimize medical interventions, improve patient care, and promote medical responses in emergencies, particularly in situations where access to blood types is very important. Fingerprint-based blood type detection can also be found in forensic and disaster management applications. There, rapid identification of a person's blood type is essentially important for the delivery of appropriate medical care. While this technology is developing, it is committed to improving the efficiency and accuracy of healthcare systems and emergency services [2]. Fingerprint detection is used intensively, especially in access control and security systems, especially in access control and security systems, due to the persistent stability of fingerprint patterns, and the permanent stability of fingerprint patterns that are unique to each individual throughout their lifetime. This uniqueness and stability make fingerprints an ideal candidate for linking personal medical data, such as blood types, with a particular person. Detection of blood groups by fingerprints is based on the presence of proteins or antigens associated with the individual's blood type, found in the sweat of the fingertips and grooves [3]. These antigens are compatible with subscriptions and RH blood type systems. By analyzing the composition of this antigen with sweat, one can close a person's blood type. Fingerprint-based blood type detection makes it a more convenient alternative to traditional blood tests that are invasive, painless and require blood to be pulled with a needle. This is especially advantageous for children, elderly people, and those who are afraid of needlesGroup detection can quickly provide information essential to appropriate healthcare. By integrating blood type information into people with fingerprints, we can improve the accuracy and accessibility of this important medical information. It can support members of health occupations in emergencies, surgery, and blood transfusions [5]. Research in this field is further developed, and advances in sensor and data analysis techniques may improve the accuracy and practicality of fingerprint-based detection. This allows us to

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change the way we deal with it and use medical information. In summary, fingerprint-based blood type detection is a promising and non-exploratory approach to quickly and accurately finding people's blood groups. There are applications related to healthcare, emergency response, and forensic medicine, and ongoing research aims to further improve and expand skills [6]. The process begins with collecting individual fingerprints. This can be done with a standard fingerprint scanner or a more specialized biometric device for medical purposes. It could revolutionize management and the use of medical information. This sweat contains proteins or antigens that are connected to a human blood type. Collected fingerprints are analyzed to determine the composition of the sweaty antigen. The system specifically aims for antigens in relation to subscription and RH blood type systems. This allows us to draw a well-discovered conclusion through an individual's blood type by examining antigen composition and by making a general classification of blood types. For example, if the analysis indicates the presence of antigens and RH antigens, the person likely has a blood type-A positive (A+) [7]. As soon as the analysis is completed, the result will be a specific blood type. This information can be displayed on computer screens, printed as reports, and integrated into electronic medical files, making it accessible to members of medical professionals. It is important to ensure the accuracy of this method. Extensive research and validation is conducted to determine a reliable correlation between sweaty composition and blood type composition. This includes comparing results with traditional blood tests using fingerprint analysis to confirm the accuracy of the method. Continuing research and technological advances aim to improve the accuracy and reliability of blood type identification through fingerprint analysis. Improving sensor technology, data analysis technology, and data standardization could contribute to a wider adoption in the medical field [8].

II. EXISTING SYSTEMS

Traditional methods of identifying blood types require invasive blood sample recordings and time-relieving, resource-intensive laboratory analysis. Current methods of detection of blood types are primarily based on serological tests that analyze blood samples to identify specific antigens on the surface of red blood cells. antibody.

III. PROPOSED SYSTEM

In recent years, advances have opened up new ways of recognizing blood types over the past few years. Fingerprint processing was considered as a non-invasive and rapid alternative. Fingerprints that are unique to individuals include comb patterns that are assumed to correlate with blood type. However, existing systems using fingerprint processing to detect blood groups are in the resulting stages and face a variety of challenges, including the need for large data records, high computing power, and robust algorithms, using fingerprint patterns to accurately classify blood groups. *This innovative approach offers great advantages in terms of speed, cost efficiency and user-friendly. This makes it particularly valuable for far or limited resources. Samples and special experimental equipment that improve accessibility and efficiency of medical diagnosis, especially in resource-limited environments.

IV. LITERATURE REVIEW

Related Works

[1] The use of fingerprint-based biometric authentication demonstrates considerable reliability suitable for a variety of applications. This current study leads to an effective approach to determining blood type through fingerprint analysis. Fingerprint data, characterized by many characteristic properties, serves as the basis for predicting blood groups based on various machine learning techniques. The proposed system uses multiple linear regressions on the usual smallest square (OLS) and achieves 62% accuracy. Future tests should improve accuracy results, consider additions, and expand sample size to consider controlled fingerprint functions for more comprehensive analysis. This study deals with the challenge of identifying the analysis of age-related and life-controlled diseases, such as hypertension, type 2 diabetes, and arthritis, as well as the analysis of diseases through fingerprint analysis. The study examines the correlation between fingerprint patterns and blood layers with individual ages to gain insight into the potential connections between these health conditions that occur due to aging or lifestyle factors. The entire process develops systematically, starting at the first stage of preprocessing to remove excess material and improve fingerprint clarity. Our work concludes in a matching phase that involves two segments. It is a review process using (1:n) matching and a verification process called

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(1:1) adjustment. To evaluate similarity ratings between two fingerprint images, a detailed matching algorithm using Euclidean distance is used here. The scheme is based on three types of comments: Routing, BGP, and Gaborhog. The directional identifier defines the instruction projection in the foreground of the finger. In the meantime, BGP and Gaborhog descriptors provide a fingerprint representation by encoding the local orientation for many local comb patterns and points.

[5] Results showed a positive correlation between finger patterns and subscription blood groups. With the continuous development of fingerprinting technology and the development of accurate fingerprinting algorithms, automatic identification has become a powerful contribution to the identification process. Always check.

[6] Type II and diffused lip line (UL) fingers are common ectoderm features. B+ -TypeBlut is more common in both men and women. It is even more important that the census on the ethnic attributes of Indian Arillians (northwest India) showed a significant correlation between lip lineage, fingers and subscription blood in both sexes. The results of our area studies, including different samples, clearly show that additional physical evidence such as lip pressure, fingerprints, and subscription blood layers obtained in a simple and inexpensive way can be used as additional equipment for criminal investigations. Srinagar residents were used for investigation. [7] In this study, blood groups concluded blood grouping by using simple testing methods based on plate testing methods and measurements of optical density (OD). In the future, we would like to design and implement special light source systems using photodiodes (LEDs) to increase the accuracy and efficiency of the blood typing process. The results are achieved in just 5 minutes, making it an emergency advantage compared to traditional systems with 30 minutes of response times. The methodology is simple and does not require sample extension or cubation.

The following table lists some of the reference tasks used in the current paper. We list the approaches and results for each paper. Restrictions do not mean a direct limitation of the paper itself, but in the context of the current application.

Limitations

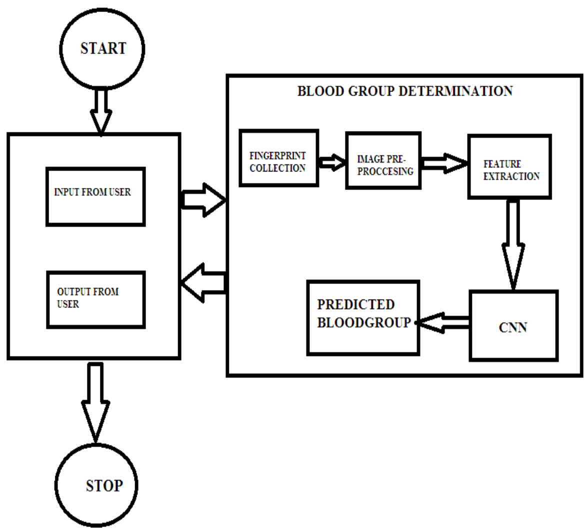
As a specific paper approach to determining blood type using fingerprints, this does not fall from the original purpose of each paper.

Sr. no	Author,Title of the Paper, Journal, Year of Publish	Methods Used	Findings	Limitations
1	Vijaykumar, Patil N., and D. R. Ingle. [1].	Computer Vision, Multiple Linear Regression	Relation between Fingerprints and blood group	Machine learning approaches used, extremely limited datasets, and an accuracy of 62%.
2	Patil,Vijaykumar, and D. R. Ingle. [2]	Literature review.	Literature review that shows relation between fingerprints, lifestyle diseases, and gender.	A literature survey and analysis without any experimental method.
3	Ali, Mouad MH, et al. [3]	Computer Vision,	Provides an effective machine learning algorithm for finger print matching leveraging minute patterns.	Preprocessing and machine learning approach may not extend to current use case.
4	Sandhu, Harpreet, et al. [6]	Survey, Image Analysis and Statistical Methods	Analyzes and correlates lip, fingerprint patterns and gender, associates them with corresponding blood groups.	A pure statistical analysis with manual sampling.

Our continued research leverages the connection between fingerprint patterns and blood layers to classify fingerprint data using deep learning techniques. Since input is in the image format, it is recommended to use a folding network (CNN) to process and classify the input fingerprint images more accurately. Folding networks can be trained to identify loops, spines, arches, and combinations thereof, and map them to the types of blood types that correlate them very much. Image processing and distinctive extraction techniques help to extract the most important features of the data, remove noise and improve CNN performance. First, models are evaluated using existing CNN architectures and observed in , and custom models can be created for better performance

IV. RESEARCH METHODOLOGY

The fundamental motivation for the study is to use the relationship between detail and blood layer to create accurate fingerprint-based blood layer tests and assess the feasibility of the concept. First, models are evaluated using existing CNN architectures and observed in performance where custom models can be created for better performance..



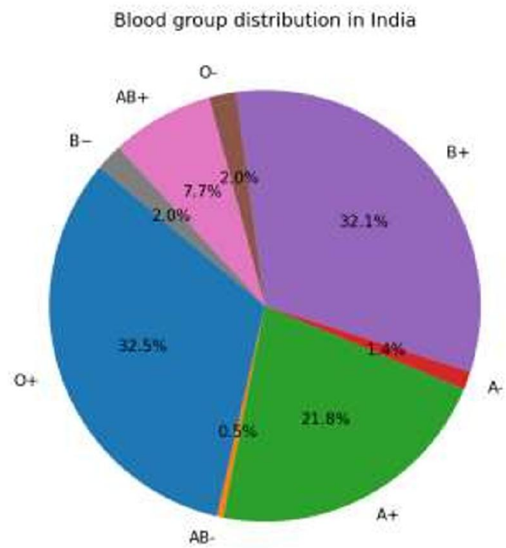
Architecture of the study

1. DATA Collection

Analytical data is mainly recorded from medical research.

Fingerprints and related blood groups details are included in different age groups, demographic data and gender. The fingerprint sensor also allows for manual investigations that can be performed to collect data. The feature vectors are then found using image processing and feature extraction techniques. A blood type associated with fingerprints is required. Such specific datasets are not available on internet platforms and require physical investigations to collect fingerprints and assign them to blood types. You can use an ink-based method, even if you use a fingerprint sensor device or lead to an inaccurate model. 2D

In a paper entitled "blood type identification" based on fingerprints using careful wavelets and binary transformations, the author conducted a survey and found blood groups and outer leaves associated with fingerprints. From the comb pattern from the background, not from the unordered area of the fingerprint. The purpose of this process is to separate the ridges (increased lines) from the valleys to all other details contained in the fingerprint image. This method is generally used to increase the contrast of images with imilar values and enable areas with little contrast. In a binary image, each pixel can only have one of two values: typically 0 (black) or 1 (white). This process involves adjusting the threshold that divides pixels in these two categories based on intensity or color values. Get a black and white image of your fingerprint that emphasizes the fingerprint features.



V. CONCLUSION

The correlation between blood type and blood type was observed from a summary of the literature of related studies. Furthermore, the presence of a pattern of repetition, a common blood type, was examined from a variety of sources. Fingerprint - Matching algorithms help to extract the functionality needed to build deep learning models. Deep learning methods are used in the area of ductography for fingerprints, potential fingerprint adjustments, and reconstruction of fingerprint classification. Such an implementation promotes the use of deep learning approaches and associates fingerprints with blood types. A foldable folding network can provide a flattened representation of an image that can be used as input to a fully connected neural network that classifies the input image. The concept of fingerprint mapping is new and there is no standardized approach, so we first classify the input fingerprint data using pre-configured CNN architectures such as Alexnet and LENET-5. The performance of each of these models is based on reviews written for application A specific CNN, which was evaluated to understand the optimal functionality.

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