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## Survey on identification of blood group by using image processing technique

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### ABSTRACT

*The blood enlightens us regarding the wellbeing. It conveys critical substances, for example, oxygen to a different piece of our body. Subsequently, recognition of blood classification is imperative. The blood of human includes the Red platelet, White Blood Cells, Platelets and Plasma. Conventional procedures are utilized by Lab specialists to check cells of the blood. In any case, this strategy is so repetitive, expends additional time and prompts the misguided results as a result of human errors. So during Blood transfusion, accurate determination of blood type is very important during emergency situation so in this method a fast, accurate and robust blood group judgement is given by using image processing techniques.*

**Keywords**— ABO blood group, Segmentation, Threshold, Histogram

### 1. INTRODUCTION

Blood group identification plays a vital role in the transfusion of blood. It is directly or indirectly related to the patient's survival, in this recent year with the application of image processing technology by research they have found that there is a need of automatic recognition system based on machine vision technology in the field of identifying blood group. ABO blood group system the classification of human blood is based on the inherited properties of red blood cells as determined by the presence or absence of the antigens A and B, which are carried on the surface of the red cells. Persons may thus have type A, type B, type O, or type AB blood. The A, B, and O blood groups were first identified by Austrian immunologist Landsteiner in 1901. Through the survey has been made by the researcher to develop an efficient algorithm for detecting the blood group under the various illumination conditions. From the existing technique, it is identified that more research has to be made for better identification and prediction.

### 2. DETECTION OF BLOOD GROUP UNDER DIFFERENT CONDITIONS

**Haihong lin** [1] proposed a novel approach to detect blood group using Raman spectroscopy based on Fourier transform .in this method PCA method is used to evaluate the sample data and its quality characteristics so as to identify the sample and provide experimental data for the application of Raman spectroscopy combined with PCA in blood identification and control. The disadvantages of this method are a combination of Raman spectroscopy and stoichiometry analysis in PCA couldn't properly distinguish A, B and O samples due to exceeding in the range of Fourier transform value.

**Sandip. D. Sahane** [2] proposed a novel approach to provide an easy and fast means of identification of blood group using IR sensors. The light from the pulsating IR LED is passed through the blood sample and the transmitted light is detected, conditioned, and is converted into a voltage signal. The variation in the intensity of the received signal due to the absorption of blood for different blood group is translated into corresponding voltage changes, to classify the blood group. The disadvantages of this method are the sensation produced by the IR sensors may sometimes be not correct. There is a drawback of using LED is that color and contrast from various viewing angles are inconsistent.

**Abubhakar Yamin** [3] Detection of blood group in disaster or remote area where experts are unavailable is a challenging task to do. In this method, there are 3 methodologies to identify blood group detection they are image acquisition, image pre-processing and segmentation, detection of blood group. Image acquisition Slides contains blood sample mixed with antiserum. The image is loaded in a proposed system in MATLAB for further processing. Pre-processing: includes resizing of the image to bring it into a specific format. Segmentation: by using the information of region starting and ending coordinates we can easily crop the region of interest. Blood group detection: we are detecting blood group by calculating the density of white pixel of each segmented region.

The disadvantages of this method take much time to perform the place worker to capture a picture in the microscope and then to identify the blood group.

**Mr. Sudhir. G. Panpatte [4]** proposed a novel approach to detect the blood group by using image processing technology. The aim of this system is to provide a result within the shortest possible time with precision and accuracy along with storage of results the disadvantage of this process is in this system it has disadvantages of requiring 30min which is excessive especially in an emergency situation.

**Neha Srivathsa [5]** proposed a novel approach to detect the blood group of a person using a smartphone by identifying the blood group of a person in low-cost mobile phone using an image processing technique. the disadvantages of this method is the morphological image processing algorithms which is used misclassified the AB positive to AB which lead to conclude that a further fine tuning of heuristics is required.

**Di Wu, Ming Zhang [6]** proposed a novel approach to the adaptive detection of blood vessels in retinal images. This method is based on adaptive contrast enhancement, feature extraction, and tracing. Feature extraction is done by using Gabor filter responses. The disadvantages of this process are mainly affected by the adaptive detection of blood vessels in retinal images. Here most false detection is due to incorrectly identified initial tracing points where the filter response analysis method need to increase its false positive rate value significantly to achieve the same goals.

**Gerda J. Edelman [7]** proposed a novel approach on the practical implementation of bloodstain age estimation using spectroscopy, the measured age of blood stains can lead to a more realistic reconstruction of the timeline of events this method is the world’s first implementation in practice of a method for determining the age of blood stains. The disadvantages of this method are a traditional collection of blood stains with moistened cotton swabs will alter their chemical composition. Further research is needed to find a collection procedure which does not influence the results of the age estimation.

**Amol Dhande [8]** proposed a novel approach on the identification of blood group by using image processing technology using a special technique of image processing like detection of background and cluster detection, the final blood group is detected on the basis of a number of clusters and feature detection of the image. Disadvantages of this system are more chances of human errors are possible, only experts can tell the blood type by seeing at the agglutination process.

**Wei Xiong [9]** proposed a novel approach on automatic area classification in peripheral blood smears in this system integrated algorithm is used for area classification and quality. Here both cell spreading and cell clumping in terms of individual clumps and the occurrence probabilities of the group of clumps over the images are considered. The disadvantages of this process are observed in decreasing performance when more data are tested decrease is not significant especially for class G where g is the area on the axis of the image.

**Palli padmini [10]** proposed a novel method for identification of a correlation between blood relation using speech signals. MFCC [mel frequency cepstral coefficients] has been used for extracting the features of input speech signal, along with the vector quantization through modified k-means LBG (linde, Buzo and gray) algorithm are implemented for reorganization of speech signal the disadvantages of this process is from the experimental analysis low correlation of speech samples of blood relation was observed.

**Table 1: Analysis of previous papers**

Title	Year published	Technique used	Algorithm	Demerits
Improvement of accuracy of human blood group	Oct 2015	Name plate	Thresholding	Needs 30 min which is excess in emergency situation
Determination and classification of blood group	Feb 2017	Morphological processing	Quantification	Chances of human error are more only experts can tell based on the agglutination process
ABO blood group detection based on image processing technology	Feb 2017	Feature extraction	Niblack segmentation	Gives accurate results but time consuming and robust method

### 3. CONCLUSION

In this paper, a survey on recent advances is done for detection of blood group, here a demanding task is done based on different techniques, like thresholding, histogram, and cluster conditions. In the literature survey various authors have implemented various methods and achieved the different goal in identifying the blood group .it is concluded that fast, accurate and robust blood group judgement method is proposed for the rapid and accurate identification of blood types in the case of emergency transfusion. This area requires advance research to enhance the performance for better results

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