



# Blood Detection Using Image Processing

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**Abstract:** The main object of this project is to identify the blood type from different blood types by image processing. Throughout our history, we often do a blood test to find our haemoglobin and our blood type. Determining the blood type is the first step when we expose to any infection and also the first step in the doctor's prescription. It is vital during any emergency situation. We are putting forward the target and identification of blood groups based on image processing technology. Most of the time our human eye doesn't notice all the things and miss few important things and doesn't give a precise result, but through this technology even the small errors or inaccuracy results are being calculated. So that the human results and their errors are reduced. Determination of the blood types in a short period and without human errors is much required. A method is developed based on processing of images acquired during the slide test. The image processing techniques such as thresholding and morphological operations are used. The images of the slide test are obtained from the pathological laboratory are processed and the occurrence of agglutination are evicted. Thus, the developed automated method determines the blood type using image processing techniques. The developed method is useful in emergency situation to determine the blood group without human error.

**Index Terms - Image Processing, Thresholding, Morphology, HSL plane, Quantification.**

## I. INTRODUCTION

Blood Prototyping is probably the most widespread and simple medical test. Blood prototyping is one of the most commonly performed tests worldwide. It is performed before any major surgery and prior to any blood transfusion. However, it is an extremely accurate examination of even the smallest errors that can lead to serious consequences that may also lead to death. Indeed, even within the gift of the present day the simple methods of ancient times are used to determine the category of human blood that is impersonal. The coming demise explores another way to determine a person's blood type using images related to ways to win this opportunity. At its root, most of the errors in concluding a person's blood group come from dividing the event of the interaction between the blood considered and the reagents used. Subsequent chapters will show agglutination recognition by looking at a picture from a blood test and subsequently finding the difficulty of collecting blood where the reagents meet or do not find when they come in contact with the blood. All other blood phenotyping systems depending on the plate and imaging techniques to detect abnormal agglutination (between Blood tests and Reagent). The ABO-Rh system for blood clotting and blood phenotyping that mechanizes the whole method of testing, which includes compounding / centrifugation, reading and interpreting the results presents. The framework was to test the blood of donors

## II. PROPOSED SYSTEM

Blood group Detection of HSL Luminance aircraft. In our proposed framework, reagents are integrated with 3 blood samples. After some time, agglutination should occur. After agglutination enhancement, the slide is captured as an image and authorized to automatically in the MATLAB image prepare for device encryption. By using this framework, the greater the likelihood of human error can be eliminated. Finally 3 blood samples combined with 3 different reagents mainly anti-A, anti-B, anti-D are taken from the slide. After a certain day, agglutination may or may not occur. After the agglutination incident, a slide containing three blood samples combined with 3 different reagents was photographed as a photograph and allowed to be placed in the MATLAB image processing toolbox. This system reduces the chances of finding a false blood group.

### III. METHODOLOGY

The image processing techniques used for blood group detection are: • Pre-processing strategies • Thresholding • Morphological activities • HSL flight • Quantification In the proposed project, one of the pre-preparation methods, such as shading aircraft, and a blurring switch were used. Preliminary image processing can basically build the reliability of visual acuity testing. a few channel functions that enhance or decrease the subtlety of certain images enable difficult or fast exploration. customers can enhance the thecamera image with more than one shot. segregation contains multiple image enhancement image channels for feature risk development feature, audio camouflage, male or female transformation, and more. the facing image contains some photo editing skills. Increased complexity in the form of a combination of vertical or vertical binarization, query tables or aerial image classification. desires subside with binning. image pivot. Figure  $f(x,y)$  is made up of soft articles on a dark base. This method is used to distinguish light articles from a dim base. is terminated using side esteem  $T$ . Any position of the image  $(x, y)$  where  $f(x, y) \geq T$  is called the object or element of the front position; often, the truth of the matter is called on the basis of the point. Strip silk fabric based primarily on Diagnostic Tester Silk appears to contain immune reagents A, B and Rh and is blocked. Circles exposed with a diameter of 25 mm outside the distance and internal diameter of 20 mm are exposed for the purpose of limiting the reagents limited to the inner area of the circles. The fabric is supported by a cement for medical testing and cut into individual strips to be used. Whole blood samples are tested for the purpose of care, water beads are prepared in a colored area in the centre of the entire circle and then 2-3 mL of blood from the patient's finger is added to water and mixed for 10 seconds. Depending on the blood type, the accumulation occurs within a circle when that particular compound is found inside the affected person's blood (see parent 2). within the event that agglutination occurs in the control circle, at which point the thread is defective and the experiment needs to be replaced.

#### A. Data Collection

Check Samples and picture Find 4 test single people T1, T2, T3 and T4 with blood categories O +, O-, AB + and B + one by one offered a check. pictures were attached to each with ten different Android phones (table I) used by phones used in the growing market. The pixy was obtained by taking photographs of the tracts with the aim of keeping all four circles in each row from the same visual object. The test method covering these 4 human subjects is achieved according to the Helsinki declaration of 1975, as amended in 2000 [18]. informed consent has been obtained from all of them. Image processing An approved photo clip is prepared to separate the engraved squares (A \*, B \*, Rh \* and C \* - see discern 2) within the entire slide to close the texture thread and not to use the tested blood on it. These releases were made using the translation of MATLAB students R2015b. Image encryption has been changed to create and test statistics

#### B. Colour Plane Extraction

The colored plane contains color facts in the picture. front and back beyond the color of each image have specific features. Tones within the plane of hue are not altered by any shades. in this function, the unusual object for covering is removed as it carries a very large amount inside the RGB shading plane.

#### C. Thresholding

It's the main technique for picture division. From a grayscale print, thresholding exertion is employed to make double images. The grayscale tests are grouped into two corridors as background and object. It could be viewed as an exertion that includes assessments against function  $T$  of the shape  $T = T(x, y, (p(x, y), f(x, y)))$  Where  $f(x, y)$  is the slate stage on the factor  $(x, y)$  and  $p(x, y)$  denotes some original parcels of the factor. So pixels divide 1 count object and pixels with label 0 behind the count. However the  $f(x, y)$  edge is universal if  $T$  relies on both  $f(x, y)$  and  $p(x, y)$ . If  $T$  depends on a lot of  $f(x, y)$ . If  $T$  is highly dependent on  $f(x, y)$  (in different terms, very effective in slate-stage values) and only the cost of  $T$  is re-related to the pixel character, this fashion is known as international thresholding. Blending is the task of gathering solid and fast objects in such a way that the objects in the same centre are more similar to all the others than those in other businesses. It can be determined that both real history and objects are different.

#### D. Morphology

Includes pre- or post-processing operations that include stretching, rust, morphological filtering, and granulometry. Important functions for stretching and rust. The function of the corrosion slightly reduces the limitation of data in relation to its heritage and the stretching process increases the size of the data. through expansion and corrosion second functions such as opening and closing can be completed. Morphological functions are used to close vocal cords and broken edges.

#### E. HSL plane

HSL light represents Hue, Saturation, and Luminance. Hue is indicated by the degree around the shadow wheel, while achromatic and light is set as a percentage. Color uses a popular window shade selector with a rating of 0 to 239 (approximately 1 to 240) in each satisfying area, making the calculation clean. HSV stands for Hue, Saturation, and Value. a third model, common in innovative and prescient laptop works, HIS. For each cylinder, the view around the important perpendicular axis is aligned with the tinge and achromatic. Hue to HSL and HSV refers to Filling the Space and is very different. RGB bias has specific HSL and HSV spaces. a top healthy example of a circle of objects in RGB color interpretation.

F. Quantification

The measurement factor may be defined in the same way as quantum or quantum degree. location, advocate, divagation, small numbers and off image come under this. Measure the feature expressed as a number or size scale. Measure the strongest ease in the area of interest stated. location (face probes tested for full image), description (normal pix-el value), fashion divisions, small and external pixel depth values are determined. the use of the price of the common division, the merger situation is recognized. however, it is proved that no consensus exists, if the normal separation penalty does not exceed sixteen. however, it is shown that brotherly love is possible, If the average divorce rate is equal to or less than 16. The final result of the measurement is verified by observation. location, attorney, segmentation, minimum values and off image come under this.

Range	Group
0-7000	B-
7000-10000	B+
10000- 20000	AB+
20000-24000	AB-
24000-28000	A+
28000-37670	A-
37670-38000	o+
>38000	o-

IV. RESULTS AND DISCUSSION

Fig1.1: Result of A+

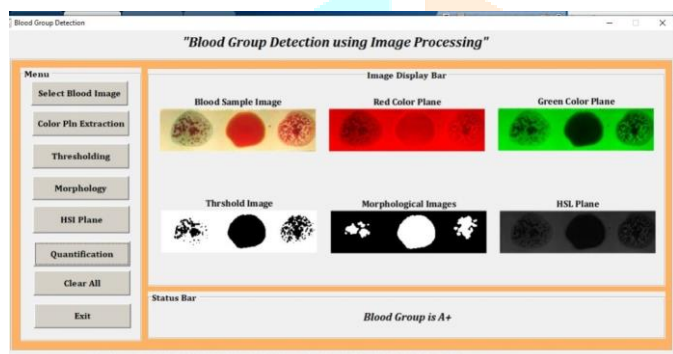


Fig1.2: Result of A-

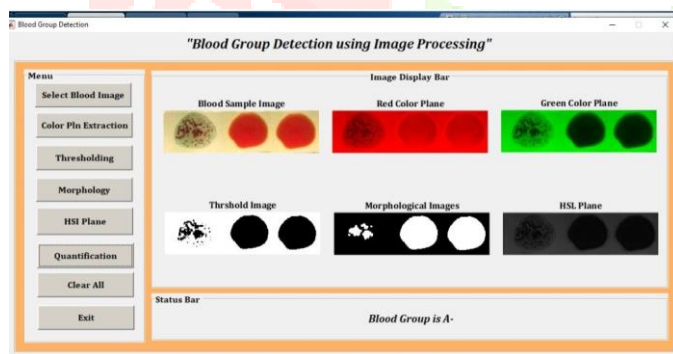


Fig1.3: Result of AB+

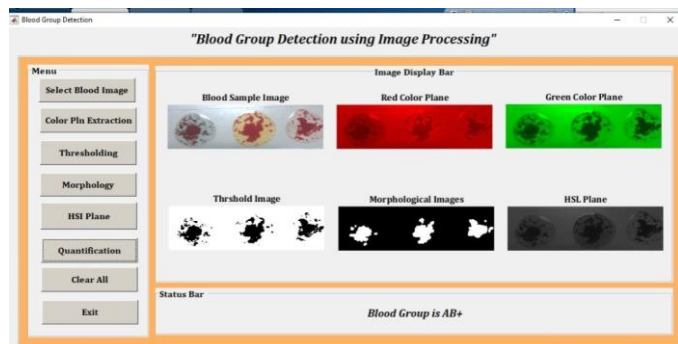


Fig1.4: Result of AB-

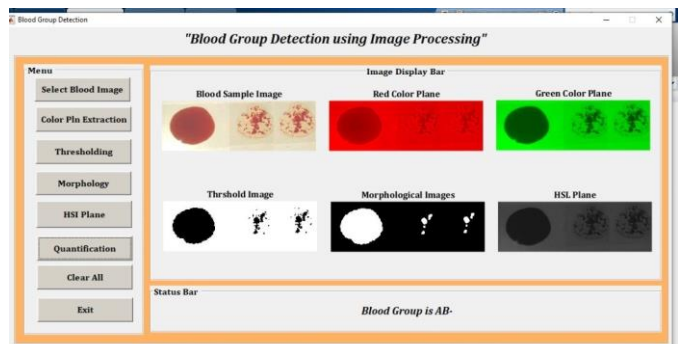


Fig1.5: Result of O+

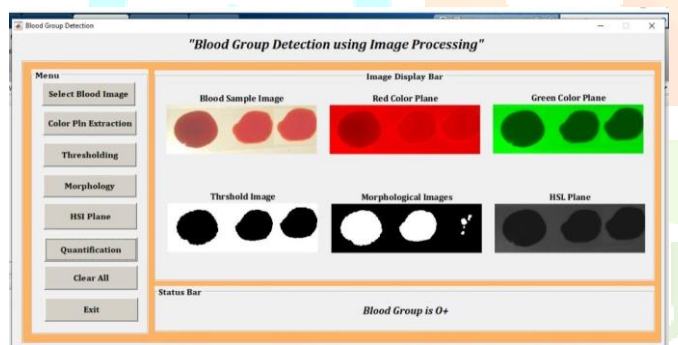


Fig1.6: Result of O-

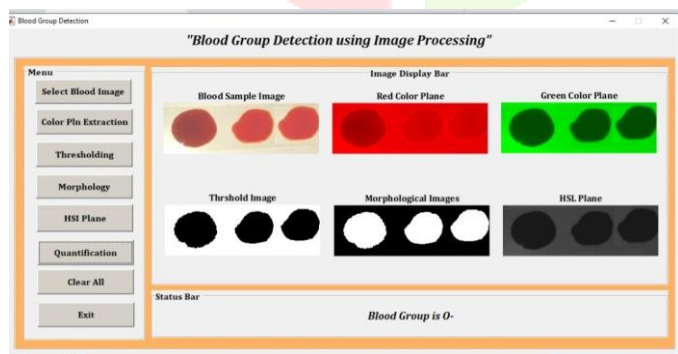


Fig1.7: Result of B-

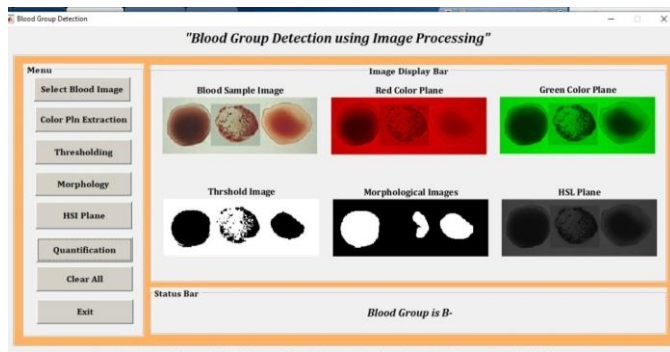
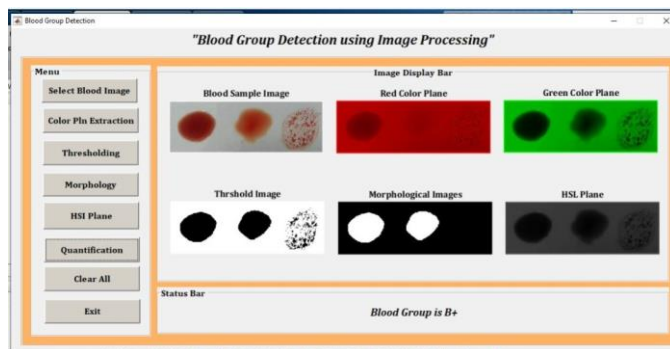


Fig1.8: Result of B+



## V. CONCLUSION

The machine has developed in a solid way so that it is not too affected by the excellent conditions. Advanced image processing software works well and effectively detects the occurrence of agglutination and as a result the blood centre of the affected person in the short-term language. The gadget may receive a high percentage of sensitivity and clarity to assist in determining the blood centre in an emergency. A concise, accurate, and effective method of judging a blood group is proposed for the rapid and accurate detection of blood types as a result of critical transfusions. A quick, accurate, and robust blood transfusion procedure is proposed for fast and accurate blood transfusion in the event of an emergency transfusion. A large number of previous tests indicate that this method can quickly and efficiently select the serum and antibody agglutination reaction, after which it acquires a blood type, to meet the requirements of an automatic blood type analyst.

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