**BLOOD GROUP DETECTION USING IMAGE PROCESSING SYSTEM**

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***ABSTRACT***

Determine blood type is essential before administering a blood transfusion, including in emergency situation. Currently, these tests are performed manually by technicians, which can lead to human errors. Various systems have been developed to automate these tests, but none is able to perform the analysis in time for emergency situations. This work aims to develop an automatic system to perform these tests in a short period of time, adapting to emergency situations. To do so, it uses the slide test and image processing techniques using the IMAQ Vision from National Instruments. The image captured after the slide test is processed and detects the occurrence of agglutination. Next the classification algorithm determines the blood type in analysis.

Finally, all the information is stored in a database. Thus, the system allows determining the blood type in an emergency, eliminating transfusions based on the principle of universal donor and reducing transfusion reactions risks.

INTRODUCTION

Before performing a blood transfusion is necessary to perform certain tests that are properly standardized. One of these tests is the determination of blood type and this test is essential for the realization of a safe blood transfusion, so as to administer a blood type that is compatible with the type of receiver. However, there are certain emergency situations which due the risk of patient's life, it is necessary to administer blood immediately. In these cases, as the tests currently available require moving the laboratory, it may not be time enough to determine the blood type and is administered blood type-0 negative considered universal donor and therefore provides less risk of incompatibility. However, despite the risk of incompatibilities be less sometimes occur transfusion reactions that cause death of the patient and it is essential to avoid them, administering blood based on the principle of universal donor only in emergencies . Thus, the ideal would be to determine the blood type of the patient even in emergency situations and administering compatible blood type from the first unit of blood transfusion. Secondly, the pre-transfusion tests are performed manually by technician's analysts, which sometimes lead to the occurrence of human errors in procedures, reading and interpreting of

results . Since these human errors can translate into fatal consequences for the patient, being one of the most significant causes of fatal blood transfusions is extremely important to automate the procedure of these tests, the reading and interpretation of the results.

DESIGN AND APPLICABILITY

We have used open CV for Image Processing. The sample is taken and analyzed using 4 different layers. The Image with Red, Green, and Blue color were layered in the Image. The Samples are reacted with the reagents such as Reagent Anti-A, Reagent Anti-B, Reagent Anti-AB, Reagent Anti-D. Initially, The Image with Green Layer is peeled off excluding the other colors and when this is done, Image obtained by applying Green Color Plane is extracted. Auto Threshold is done for obtaining the bright image of the blood pixels with red background. Clustering