

## ABSTRACT

In the medical fields sometimes still occur dissatisfaction services that caused by lacking facilities in blood testing. If a lot of number of blood donors, it will cause problems in the determination of blood group types. Testing have been performed with several methods of checking the blood type slide method (antiseras), magnet, gel and the tube. Thus requiring a rather long process of checking the blood type.

This problems encourage the authors to do the research and verificate the design system based on digital image processing Field Programmable Gate Arrays (FPGA) to determine the blood group type. This system has not been tested properly in determining the types of blood groups in order to work faster than the checks tool using antisera that had been done.

This research use a blood sample as an input image of the previous multiple-image systems trained using the methods of Artificial Neural Network (ANN) with matlab software to obtain the pattern image according to blood type. Then the image of the blood sample entered into the XSA-3S1000 FPGA board by the parallel port and processed for display on the Seven Segment Display (SSD) further in the form of certain symbols that translate the type of class A, B, AB or O. So that the end of the performance results of the study obtained 92% accuracy in matlab for each resolution and accuracy performance in the FPGA 92%, 92%, 92%, 90% and 86% (respectively ordered by resolution of 32x32, 48x48, 64x64, 80x80, and 96x96 pixel).

**Key words:** blood type, ANN, FPGA and VHDL