ABSTRACT

Adjustment of human blood groups is an important requirement in order to donate blood or receive blood transfusions, this is because not all blood types match each other. Donating or receiving blood that does not match your blood type can trigger blood clots and lead to fatal complications for the human body. When determining blood group, the difference in blood group based on the clotting or not clotting of the blood, these changes will determine the result of the type of blood type. Currently, in determining blood type, it still relies on the ability of the eye, so the accuracy results depend on the eye of the examiner. Errors in determining blood groups may occur when testing large amounts of samples. Loss of concentration and fatigue is a factor in errors in blood group detection.

To solve this problem, a Tensorflow-based human blood group was designed. The design of this tool uses ESP32-CAM as a tool to capture images, and the Tensorflow Object Detection API as a framework used to train and process an image. The way it works is that the ESP32-CAM will capture the image of the blood sample and then send it via the IP address. Through the IP Address, the python program will access the image, then the image will be processed based on a model that has been previously trained. The results of this processing will be displayed in the form of a window program along with the blood type and level of accuracy.

The results obtained from this final project, it is concluded that the training dataset with a total of 360 images uses more than 25,000 steps, while for the training process with a total of 40 images only uses 3,000 steps. The number of steps will affect the level of accuracy during detection, the more steps you use, the greater the level of accuracy you will get. In the testing process, this tool produces a different level of accuracy in each blood group, based on the results of the tests that have been done, almost all blood types AB can be detected entirely.

Keywords*: ESP32-CAM, Tensorflow, Python, Blood Type, Image Processing*