ABSTRACT

Anemia is a disease that is often found around us. Anemia often goes unnoticed by sufferers. Generally, people with anemia complain about the condition of the body that is weak, easily tired, and a dizzy vision. The problem is sometimes the disease is underestimated by some people while it can inhibit daily activities. Especially in Indonesia, cases of anemia have increased significantly. Based on Riskesdas data in 2013-2018, there was an increase in anemia sufferers in the age category of 15-24 years by 18.4% to 32%. One way that can be done to prevent such cases is by early detection by measuring hemoglobin levels. A common method of measuring hemoglobin levels is the invasive method, which is blood collection through the stabbing of a syringe in a vein. However, this method causes discomfort or pain for the patient, so another method is needed without injuring the skin, which is called a non-invasive method

Previously, non-invasive examination of hemoglobin levels had been carried out through conjunctival objects and produced a system with an average accuracy of 88,5%. However, this method still causes pain while taking images. Referring to these problems, this Final Project performs non-conjunctival image processing through tongue. Measuring hemoglobin levels through tongue images was carried out using the regression method. In addition, conjunctival imagery is also used as an alternative comparison standard for blood. The degree of redness were tested to predict hemoglobin levels.

After going through system testing, it can be concluded that the system works with the average precision of 54% and the highest accuracy of 100% on testing between hemoglobin output from the system and the application of the Hb eye.

Keywords: *Digital image processing, Hemoglobin, Non-Invasive, Tongue image*