ABSTRACT

Hemoglobin is the main component in red blood cells, which functions to transport oxygen from the lungs to other peripheral tissues in the body which then exchanges oxygen for carbon dioxide and then carries carbon dioxide back to the lungs to be exchanged for oxygen. The traditional measurement of hemoglobin levels is by taking a blood sample from a patient using a needle and then processing it using a chemical process, in that case, the measurements taken can cause pain to the patient and require time to collect blood samples and carry out their analysis.

From the description above, it is necessary to have a hemoglobin level measurement system that is carried out in a non-invasive way that is capable of real-time measurements that are connected to a database and processed using machine learning with a linear regression algorithm and a mobile application that can display measurement results in real time and history is needed. patient's hemoglobin measurement results. In this final project, an information system for measuring hemoglobin levels has been created using a QR Code as a user mapping using a linear regression algorithm and using an extreme gradient boosting algorithm as a reference to perform accuracy on a linear regression algorithm that is integrated with the firebase realtime database.

The information system that has been created for patients has a delay of 254 ms and a throughput of 3616 bps with a lollipop minimum operating system. While the information system for doctors has a delay of 335.801 ms and throughput of 3406 bps with a minimum lollipop operating system. The results of testing the accuracy of testing the extreme gradient boosting algorithm have an accuracy of 94.91% with an RMSE of 0.801085 and a linear regression algorithm testing accuracy of 97.9059% having an accuracy of 0.324898 with an RMSE.

Keyword: *Hemoglobin, Mobile Application, Machine Learning*