ABSTRACT

This research designed a system to be able to detect blood pressure so that it gets a value in the form of *Sistolic* and *Distolic* humans by using the *Photoplethysmograph* (PPG) method, then the sensor that is used is the *Camera Sensor* on smartphones. The system uses *the Android Studio* application media to be expected to facilitate and be able to detect *the blood pressure* of each user using *the iHealthMonitor* application. Blood Pressure Checking to users according to *inclusion* and *exclusion* criteria. Blood Pressure data that has been obtained by extracting signals through Flash on Smartphones and also Smartphone *Camera Sensor* to be obtained *Systolic* and *Distolic*.

Blood pressure and heart rate are interconnected, although not linear, parts, so *photoplethysmograph* (PPG) signals are obtained. Furthermore, the results of Blood Pressure in *the iHealthMonitor* application are calibrated with a comparison tool, namely the CK-102S Digital Blood Pressure Monitor so that the difference or error of measurement is obtained to determine the quality of *the iHealthMonitor* Application with *a systolic RMSE* error value of 2.40 and *RMSE Distolic* 4.13. *MAE Sistolic* blood pressure is 2.06 and *MAE blood* pressure is 2.86. The results of the study were compared with research on references or other applications to get how much difference and accuracy level in each method.

Keywords: *Photoplethysmograph, Blood Pressure, iHealthMonitor, Android Studio, Sensor Camera*