ABSTRACT

Nails have a function or role that is very important to protect the soft fingertips and have a lot of nerves. The condition of each person's nails is different. A person's health can be seen from the condition of the nail. One disease that is easily detected by changes in nail conditions is *cirrhosis*. In the medical world, several expert systems have begun to be used in helping doctors to diagnose a patient's disease. The method used in this Final Project is a certainty factor. In this case, *cirrhosis* can be diagnosed based on changes in the nail.

Therefore, in this Final Project the author will make an application that can detect early *cirrhosis* based on changes in nail conditions. The purpose of designing this application is to detect *cirrhosis* based on nail conditions on android devices. The result of image processing and expert systems in this application is only information. With the Early *Cirrhosis* Detection application based on nail conditions using the certainty factor classification method in the expert system and dilution of the gray-based matrix image feature (GLCM), it is expected to be used easily by the community so that people are aware of the importance of nail health. From the tests that have been done, the best accuracy results are 70.93% with light intensity values of 100-500 lux, a distance of 15 cm and an angle of 0^0.

Keywords: certainty factor, nail, expert system, image processing, gray-level co-occurrence matrix, *cirrhosis*.