ABSTRACT

Cataracts is the vision impairment that caused by opacities in the eye lens thus blocking the light reception by the eye lens. Cataract can cause nearsightedness (myopia) and even blindness. The late of handling process will cause opacities in the eye lens will be thicker, so the light can not penetrate the eye and at the end will lead to blindness. Prevention of cataracts can be done through early detection. Through the early detection, the handling action can be done before the opacification of the eye lens getting thicker. In general, cataract detection can be done by examination of the pupils using a slit lamp, which is the detection by this way is very limited because it can only be done by ophthalmologists and is not owned by all hospitals or health centers. Therefore, in this final project a system of detection and classification of cataracts based on Android will be designed, so cataract detection can be done easily.

In this final project the image of eye pupil for normal, imature cataract, and mature cataract condition are used as training and testing data, then Gray-Level Co-Occurance Matrix (GLCM) and K-Nearest Neighbor (K-NN) method. The GLCM method is a statistically based feature extraction that used to get the feature from each image pixel which is that features will be used in the classification stage. While, the K-NN is the classfication method that used to classify testing data into normal, imature cataract, and mature cataract.

The result of the above processes is an Android-based application that can be used for cataract detection and classfication with accuracy at 91,11%.

Keywords : *Cataract, Gray-Level Co-Occurance Matrix, K-Nearest Neighbor*