ABSTRACT

The eye is one of the most important senses for human life. Therefore, Eye is a matter of concern in the field of health. WHO estimates that more than seven million people become blinded each year. Blindness caused by cataracts in Indonesia reaches 0.78% of the population and in the national survey of 2014 reported the prevalence of cataracts reached 1.8%. The importance of healthcare needs drives some software developers to take part in the field. With the development of technology, digital image processing can now also be developed to process the features that exist in the human body. This allows cataract detection to be easier to take advantage of these features. Cataract disease needs to be distinguished which ones have to be in operation and which ones can still be tolerated. Cataracts that must be in operation are mature cataracts. While that can be tolerated is an immature cataract.

Image data comes from the capture of the slit-lamp eye inspector that has been cropped in the pupil manually. The data goes into systems designed to divide senile cataract stages by type: immature, mature, and normal. The process of grayscaling and resizing on image data is done on pre-processing to make data readier to process by system. Feature extraction systems done by Gray-Level Co-Occurrence Matrix (GLCM) method. In the classification, used Support Vector Machine method that relies on the best hyperplane that serves as a separator of two data classes in the input space.

This program has been able to detect and classify the stage of senile cataract disease into three classes: immature, mature, and normal. Variable testing is performed to produce the best accuracy. The test results show that Green layer variables on pre-processing, combination of co-occurrence angle 0^o and 45^o on GLCM, Quadratic kernel function and hyperplane separation method with Quadratic Programming on SVM, capable of producing the best accuracy of 93.33% with computing speed 0.632 seconds.

Keywords: *Cataract, Gray-Level Co-Occurrence Matrix, Support Vector Machine*