ABSTRACT

The eye is one of the most crucial sensory organs for human survival. The eye functions as the visual organ. The most severe visual impairment is blindness. One of the causes of blindness is cataracts. Based on the national data from the Rapid Assessment of Avoidable Blindness (RAAB) survey conducted by the Ministry of Health from 2014 to 2016, targeting a population aged 50 and over, it is known that the blindness rate reaches 3% and cataracts are the leading cause of blindness (81%). In general, it is difficult to distinguish between eyes affected by cataracts and normal eyes, so people often do not realize when they are indicated for the disease. Considering the aforementioned descriptions, it is crucial to detect cataracts before blindness occurs. Therefore, this final project report will discuss the classification of cataracts through retinal fundus image using the Convolutional Neural Network (CNN) method with VGG-19 architecture. The dataset used consists of 1088 images with 2 classes, namely normal and cataract classes. The dataset is taken from a website specializing in data science called Kaggle, and the dataset used is titled Ocular Disease Intelligent Recognition (ODIR). The dataset contains structured ophthalmological data from 5000 patients with age information, left and right fundus eye photos, and doctor diagnoses. The testing results using the CNN method with VGG-19 architecture perform well in predicting cataracts in eyes with an accuracy of 97.26%.

Keywords : Cataract, Image Processing, Convolutional Neural Network, VGG-19