

## ABSTRACT

Cholesterol is a fat that is in the human blood that is needed for the formation of some new hormones and cell walls. Excess total blood cholesterol can result in coronary heart and stroke. Normal human cholesterol levels are in the range of 200 mg/dL or less. Testing cholesterol levels in the blood at this time still uses invasive techniques that the blood of patients taken using syringes. Previously, the patient had to fast for 10-12 hours thus making this technique less efficient in terms of time. Therefore, there is a system that can be used for early detection of cholesterol levels with a short time through the eye image using iridology technique.

The study means to detect a person's cholesterol including normal cholesterol, cholesterol risk, and high cholesterol. The system process begins with acquisition of image data and then carried out a preprocessing process consisting of the resize, ROI crop and the conversion of RGB eye image to grayscale. In this study the Local Binary Pattern (LBP) method is used as a feature extraction method and the Artificial Neural Networks method (ANN) as its classification.

Based on the test results, the built-in system is capable of detecting cholesterol through iris image and classifying into three classes. Total iris image used by 120 images with 60 training data and 60 test data. The results obtained are the highest accuracy level of 91.66% and the average computing time is 0.3362 s with one-order test parameters, radius ( $r$ ) = 1, resize pixels  $768 \times 768$ , ROI = 64, Epoch 1000 and hidden layer 10.

**Keywords:** Cholesterol, Eye Image, Local Binary Pattern, Artificial Neural Network.