Klasifikasi Iris Biometrik menggunakan Convolutional Neural Network (CNN) dengan Metode Segmentasi Bitplane Slicing

Iqbal Hapid Sukana Putra[1], Said Al Faraby[2], Untari Novia Wisesty[3]

[1,2,3]Fakultas Informatika, Universitas Telkom, Bandung
[1]iqbalhapid18@gmail.com, [2]said.al.faraby@gmail.com, [3]untarinw@telkomuniversity.ac.id,

Abstract

Iris is a part of the eye that gives a unique texture and color to each individual. The iris is the area of the bracelet which is bounded by the pupils and sclera or the white part of the eye. These unique characteristics can be used as a basis in biometric security systems. But in the practice of its implementation, many problems include like the less practical noise removal process or system recognition algorithms that are too rigid. Therefore, a system is built based on these problems as a solution. As a solution step in the process of building the system, the Bitplane Slicing segmentation method is used which aims to find the iris area with more practical steps. The results of several tests use 50 classes from two datasets and the best segmentation results are selected by each dataset of 25 classes as input data for classification testing. .

CNN as a classification method that is based on learning networks, is believed to be able to handle changes in input system images resulting in tolerance to the system. Unlike the template matching system, the system that is formed is certainly stiffer and sensitive to image changes. Based on the lack of information about CNN applied to iris recognition, testing is needed which is expected to be a measuring value in terms of the accuracy and efficiency of the network architecture formed. Tests carried out using 25 classes which were the results of testing the best segmentation from two datasets consisting of airport employee datasets and CASIA lamp iris datasets, obtained accuracy 82% for airport employee datasets and 98.1% for CASIA lamp iris datasets.

Keywords: Iris Biometric, segmentation, classification, Bitplane Slicing, Convolutional Neural Network