

## ABSTRACT

Iris biometric now is a trend for verification and identification system because the accuracy resulting from the system is very high. But from the implementation results, often have problems caused by noise on the image. Therefore, a solution is needed to handle the noise. From this problem a K-means clustering method is used before Canny edge detection and Circular Hough Transform at the segmentation stage. The purpose of K-means algorithm is to minimize detection errors at the segmentation stage. From the results of several tests using 50 classes of two datasets, the dataset test of airport employee and the dataset Iris Casia Lamp, obtained 96% segmentation accuracy for the dataset of airport employees and 92.11% for the dataset of Casia Lamp iris. The results of the segmentation will be normalized and used by the Convolutional Neural Network (CNN) algorithm.

CNN is one of the methods that is now a trend for image classification problems due to its very high accuracy. But for the iris classification problem, the CNN implementation is still very minimal, so it is not known exactly the accuracy and architecture used for iris classification. Therefore it is necessary to test the classification of iris using CNN. After testing several different architectures, using 25 Class of two datasets, the dataset of airport staff and Iris Casia Lamp, obtained the best accuracy for the dataset of airport employees with 2 training data and 1 test data of 80%, while for the Iris Casia dataset Lamp with 15 training data and 5 test data of 99.2%.

**Keywords:** Iris Biometrics, noise, Deep Learning, Convolutional Neural Network, K-means, *classification*.