

ABSTRACT

Cows are one of the livestock that are widely cultivated in Indonesia, ranging from meat, milk, dung, leather, to helping with farming. According to the Central Statistics Agency, in 2020 there were 17,466,792 beef cattle populations in Indonesia and 568,265 dairy cattle populations in Indonesia. Of the 17,466,792 beef cattle population in Indonesia, there are 896,200 cattle population in North Sumatra, which is the top 6 province with the largest beef cattle population. In Indonesia itself, there are many types of cattle that grow and develop, some of which are Aceh, Brangus, Brahman, Simmental, Limousin, FH, and many more.

In this final project, the author designs a cattle breed classification system using the Gray Level Cooccurrence Matrix (GLCM) method using K-Nearest Neighbor and Support Vector Machine (SVM) classifications. This research utilizes digital images with GLCM image extraction. GLCM is a second-order static feature method that is performed by a co-occurrence matrix. The working principle of GLCM is to convert an RGB image into a grayscale image then perform color segmentation by calculating the cooccurance matrix value after it is normalized to obtain the desired parameters. This study uses 2 types of classification, namely the K-NN classification and the SVM classification.

In this test, the image acquisition process was carried out, taking cow image data as much as 900 image data that could be used 600 for training data of which each type contained 100 training data and 300 test data of each type there were 50 test data in this study. So that in this test, 100% accuracy was obtained in the K-NN classification with a computation time of 0.967 s using the distance mahalonobis type with a value of $k = 1$ and the SVM classification obtained an 80,3% accuracy rate with a computation time of 1,645. s by using a polynomial kernel type with class SVM OAO.

Key Words : *Cow, Gray Level Cooccurance Matrix (GLCM), K- Nearest Neighbor (K-NN), Support Vector Machine (SVM)*