ABSTRACT

In the preprocessing stage to recognize features in images, such as image grouping, the commonly used method is image classification from supervised learning. However, the author is interested in examining whether lightweight methods such as unsupervised learning can also be used in similar cases. Healthy and unhealthy coffee leaves have different colors, so this element is used as the basis for calculations. The method that will be used is K-Means Clustering from the calculation of the average RGB. If the use of K-Means is proven to be successful in grouping leaves correctly, then this can be developed for further use on a real-farm scale, such as identifying what percentage of tree plots are healthy, without having to train data. The use of the K-Means algorithm to categorize coffee leaf spots based on the average RGB produces unsatisfactory clusters when only one clustering is performed. Cluster members are grouped based on the photo's lighting level and not based on the color of the leaf spots. Clustering results began to improve after further breakdown of the existing clusters. The color of the leaf spots began to have a significant influence on the average RGB value. The initial cluster, which initially contained about half of the mixed leaf members, after further splitting revealed that the leaves that were not members were only a minority. K-Means has proven to be a lightweight alternative method for image clustering, but the profiling process must be done manually.

Keywords: coffee leaf, image processing, K-Means Clustering, average RGB