Abstract

Lettuce is a plant often eaten by humans as a companion food, lettuce has a bright green color when ripe, and the level of maturity of lettuce is also measured from the taste of lettuce leaves, so that harvest time does not damage the texture of lettuce leaves. can observe reporting to users without having to damage the texture or look directly at plants, then the solution with K-means clustering algorithm is a grouping algorithm that can be used as color matching according to the cluster, and to determine the right cluster is used elbow algorithm. For the results of the elbow algorithm that is right in this final assignment, get 2 mature clusters, and the raw is chosen as a cluster in this system work. This system is also built on a color sensor that functions to detect the color of lettuce leaves with RGB (Red Green Blue) and microcontroller values with WiFi capability, namely NodeMCU connected to the IoT platform, which is Thingspeak as monitoring and storing the results of color sensors that will be managed by algorithms K-Means clustering. For the accuracy of the results of the lettuce maturity measurements based on the comparison of elbow 3 cluster algorithms having a raw F1 score accuracy of 57.4%, mature 5.26%, and very mature 40%, whereas when using the elbow algorithm the best value is 2 raw clusters, and mature has a raw F1 score value of 95.24%, and mature 98.77%, so using 2 clusters is more effective than 3 clusters.

Keyword: Color Sensors, K-Means Clustering, Lettuce, Elbow