

CHILLI SORTING ON CONVEYOR SYSTEM WITH TCS34725 SENSOR USING KNN (K-NEAREST NEIGHBOR) METHOD

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ABSTRACT

Sleman Regency is one of the places for post-harvest handling of red chilies under the guidance of the Department of Agriculture, Food and Fisheries of Sleman Regency. Post-harvest handling steps for chili include harvesting, transporting, weighing, cleaning, sorting, grading, auctioning chili, packaging, and shipping. Efforts to improve the quality of clean chili, then do cleaning, sorting chili according to good horticultural commodities. Therefore, we need a system or design for sorting cayenne pepper using a conveyor with a TCS34725 Sensor. The results of this study are designing the sorting of cayenne pepper on a conveyor system with a TCS34725 sensor using the KNN (K-Nearest Neighbor) method. The components used in the system include Arduino Mega 2560, TCS34725 Color Sensor, 5 Volt DC Motor, SG90 Servo Motor, LDR Sensor, L298N Motor Driver, and 12 Volt Adapter. K-Nearest Neighbor is an algorithm that functions to classify data based on learning data (train data sets), which are taken from the k closest neighbors (nearest neighbors). Testing the quality of good and bad chilies on red, green, and brown cayenne peppers used 40 chilies as a dataset and 10 chilies as test data. Test the classification and prove the system by testing the performance of the model accuracy on the tool by > 80%. Testing the TCS34725 color sensor, there was an error when testing green cayenne pepper, so the test success rate was 93.3%. The tool test using Arduino results in the calculation of the accuracy value being less than optimal, because the sample test dataset only uses 5 datasets. The accuracy results for each k value are as follows: k = 3 by 90%, k = 5 by 88%, and k = 7 by 92%.

Keywords: *KNN, TCS34725 Sensor, Conveyor, Servo (SG90), Motor Driver (L298N).*