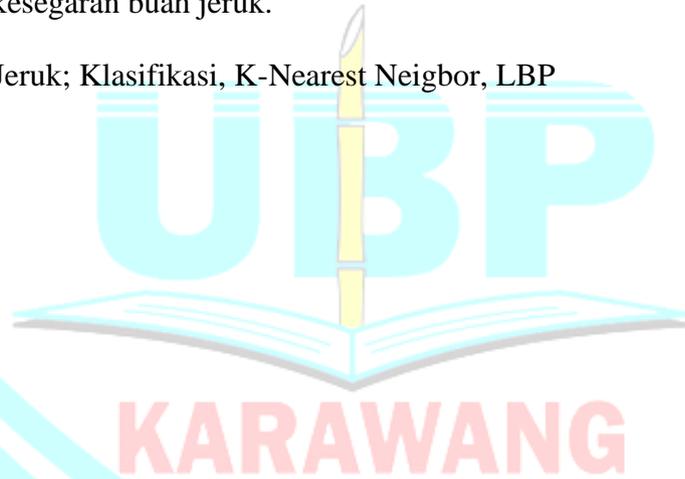


## ABSTRAK

Jeruk Adalah tanaman hotikultura yang sangat populer di seluruh dunia. Buah jeruk sangat populer di Indonesia dan banyak dikonsumsi. Konsumen sehari-hari yang awam tentang pertanian kesulitan mengklasifikasikan kesegaran buah jeruk di Indonesia. Banyak orang awam kesulitan membedakan jeruk segar dari yang sudah tidak layak konsumsi hanya berdasarkan bagaimana mereka terlihat. Penelitian ini mengimplementasikan algoritma K-Nearest Neighbor (KNN) untuk klasifikasi kesegaran buah jeruk berdasarkan fitur warna dan tekstur. Data yang digunakan sebanyak 435 citra buah jeruk yang diklasifikasikan ke dalam 3 kelas (Segar, Kurang Segar, dan Busuk). Proses penelitian meliputi tahapan preprocessing, ekstraksi fitur, pengujian model menggunakan algoritma KNN dan evaluasi dengan menggunakan metrik akurasi, presisi recall dan F1-score. Hasil penelitian menunjukkan bahwa model KNN dengan nilai  $K=5$  menghasilkan akurasi tertinggi sebesar 85%. Penelitian ini menunjukkan efektivitasnya sebagai alat bantu deteksi kesegaran buah jeruk.

**Kata Kunci:** HSV, Jeruk; Klasifikasi, K-Nearest Neighbor, LBP



## **ABSTRACT**

*Oranges are a horticultural plant that is very popular around the world. Orange fruit is very popular in Indonesia and is widely consumed. Everyday consumers who are unfamiliar with agriculture struggle to classify the freshness of oranges in Indonesia. Many laypeople find it difficult to distinguish fresh oranges from those that are no longer fit for consumption based solely on their appearance. This research implements the K-Nearest Neighbor (KNN) algorithm to classify the freshness of oranges based on color and texture features. The data used consists of 435 images of oranges classified into 3 classes (Fresh, Less Fresh, and Rotten). The research process includes stages of preprocessing, feature extraction, model testing using the KNN algorithm, and evaluation using accuracy, precision, recall, and F1-score metrics. The research results show that the KNN model with K value=5 yields the highest accuracy of 85%. This research demonstrates its effectiveness as an aid in detecting the freshness of oranges.*

**Keyword:** Classification; HSV, K-Nearest Neighbor, LBP, Orange

