

## **ABSTRACT**

Fruit is one of the commodities that can be profitable because it has a variety of varieties and is supported by a suitable climate. One of the fruits that can be found throughout the year in Indonesia is pineapple. which has a lot of nutritional content and has health benefits. People who eat fruit always pay attention to the quality of the fruit before buying it, one of which is the level of maturity of the fruit. The sensitivity of each human's five senses is different, making it difficult to determine the level of fruit maturity subjectively, so a tool is needed that can help detect fruit maturity.

In this final project, a pineapple ripeness classification tool was developed using the learning vector quantization (LVQ) method. Pineapple ripeness was identified using the TCS 3200 sensor and the MQ-3 sensor as sensors to read the pineapple skin color and the alcohol aroma of the pineapple. The devices used for the pineapple ripeness classification tool consist of Arduino Uno as a microcontroller to read the TCS 3200 sensor and MQ-3 sensor, then Raspberry pi 3 as the main controller that manages all the features of the pineapple ripeness classification tool and as an IoT platform for databases and applications. display on Google firebase and Blynk. In the LVQ method, the output classes are first determined with a value of (1) one for the raw class, (2) two for the mature class, (3) for the rotten class. From the results of testing the pineapple fruit maturity classification tool with an accuracy of 90%, with calibration results for each sensor of 90.68% for TCS 3200 and 84.9% for the MQ-3 sensor. The duration of the conveyor system in detecting pineapple ripeness has an average speed of 20.67 seconds, the duration of sending classification data to firebase takes about 4.46 seconds for the firebase platform and 5.47 seconds for sending to Blynk. Hopefully this research can be a solution and help people choose fruit with good quality, especially pineapple.

**Keywords :** *LVQ, conveyor, sensor MQ-3, sensor TCS 3200, Internet of Things (IoT)*