

## ***ABSTRACT***

*The purpose of this research is to design a banana maturity classification device based on backpropagation artificial neural network (ANN). Banana maturity was identified by its alcohol level and RGB value utilizing MQ-3 gas sensor and TCS34725 color sensor. The ANN method is used since the systems needs a classifier that can predict accurately using a given dataset. This device consist of Arduino Mega as the main controller, and NodeMCU as the IoT Gateway. Google Firebase and Blynk are used as a database and display for the ANN result. The ANN topology consists of: 4 input, 12 hidden and 1 output. The inputs are the 3 value of RGB color and 1 alcohol level value. The desired output target is set on 0.25, 0.5, and 0.75 for unripe, ripe, and rot consecutively. Based on the result, it shows that the device succesfully classify the banana maturity with 95.663% accuracy, the accuracy for each sensor calibration is 98.21% for TCS34725 and 90.025% for MQ-3. The required time for sending data to Firebase is 5.46 second and 6.56 second to Blynk Apps.*

***Keywords: Artificial Neural Network, Classification of Banana Maturity, Alcohol Sensor, Color Sensor, Internet of Things.***