

## ABSTRACT

*Resistor is one of electronic component in the category of passive component which have function as a barrier to electric current in an electronic circuit. The resistance value of a resistor is symbolized by Omega ( $\Omega$ ). There are several types of resistor components, one of them is a fixed resistor where the resistance value is described in color. The fixed resistor consists of four and five color. Each color has a different value. Due to the small resistor size, some people difficult to read fixed resistor values, especially for people with color blindness.*

*Therefore, in this research realize an application to read the value of fixed resistor which have a high level of efficiency in its use. The system makes it easy for users which have difficulty to memorize resistors color table and color blind sufferers in reading resistance values. This application uses a smartphone camera as its main interface by scanning resistor in real time. Image processing based on the OpenCV library detects every color and value on the resistor, then calculates the total resistance. Then the resistance value displayed on the smartphone screen.*

*The image processing system design in this Final Project can read resistor values based on the color ring using the color detection method with HSV color space, where the tolerance value is still 5% for 4 rings and 1% for 5 rings. Accuracy obtained in detecting the color of 4 rings resistor, the lowest presentation is 66.7% and the highest is 100%. Accuracy obtained in reading the value of 4 rings resistor, the lowest presentation is 80.3% and the highest is 100%. While the accuracy obtained in detecting the color of 5 rings resistor, the lowest presentation is 25% and the highest is 75%. Accuracy obtained in reading the value of 5 rings resistor, the lowest presentation is 20% and the highest is 98% using a tripod and softbox. The system can work optimally with a light intensity of 3470 lux, the distance between the camera and the object is 9 cm for a 4-band resistor and 7 cm for a 5-band resistor with a camera angle to an object of 120 °.*

**Keywords:** *Android, Image Processing OpenCV, fixed resistor, resistance value reader.*