ABSTRACT

Growth on leaves is one of the important parameters in determining the growth phase of a plant. Therefore the research was conducted on the growth of leaves on a plant using image processing methods. In this study the object chosen is mustard greens, because mustard has a regular leaf shape. The system used in this hydroponic method is the wick system or axis system. In this study, image segmentation will be used for the image processing. The method used in the image segmentation is thresholding. Taking pictures of mustard leaves is from the top view using the Arducam and ESP32 that will upload images via Wi-Fi that have been connected between the computer and ESP32. Then the image is processed in MATLAB as a software for image processing. The image processing is used using the thresholding method. From the image processing method in MATLAB, it will produce a value of the area of the object in the form of mustard leaves appearing above, the area value which is the pixel value that will be displayed on the IoT platform is thingspeak. The results of this study are expected to help facilitate monitoring of mustard leaf growth. From testing 100 data by comparing the pixel area of the actual RGB value and the RGB value that has been determined has an error value of 0.679%. Data conversion from pixel to cm^2 has an error of 0.7%.

Keywords : ArduCam, ESP32, Hydroponics, MATLAB, IoT.