

## **ABSTRACT**

*In the agricultural sector weeds are plants that interfere with the growth of cultivated plants so that humans try to control them. The presence of weeds in agriculture results in competition in terms of taking water, nutrients, growing space, and sunlight which can harm cultivated plants. Weed populations can be controlled in two ways, namely by spraying herbicides, this method is widely used because it is effective in killing weeds. However, the use of herbicides can damage crops, so their use must be careful, and the second method of weed control is a traditional or physical weeding, but the physical weeding method requires a lot of human labor and time.*

*To overcome these problems can be overcome with technology that is currently developing rapidly, one of which is in the field of robotics. in this study designing a robot in the form of an agricultural rover, this rover will be equipped with a camera to detect weeds and will perform weeding using a drill automatically to facilitate the weeding process. The detection system uses the YOLOv4 (You Only Look Once) model to identify weeds.*

*The results of the design of a weeding system with a detector using the YOLOv4 (You Only Look Once) model, namely, an accuracy rate of 89% in 2 classes, the optimal distance to be able to detect at 35cm, this system is able to read the coordinates of objects detected when they are still or moving, and in the weeding system, the success rate of detecting is 85% and weeding is 100%.*

**Keywords:** *Weed, YOLO, Weeding, Agricultural Rover, Object detection.*