

## **ABSTRACT**

*Nowadays, technology has been increasing rapidly. So does in robotics technology that has entered the various facets of human life starting from the fields of industrial automation, military, biomedical instrumentation, the arts and sports fields. One of the developments in the field of sport is a robot that can play football just like a human. With reference to these developments, then came the idea to implement a method of tracking the color of the mobile robot to be able to detect the color of the ball which will then be able to follow it.*

*This final project has designed a robot that can detect the color of the ball which then the robot could follow where the ball moves. The sensor used is a camera module CMUcam3. The method used in this case is the color tracking method. This method works by matching the colors to suit in any bodyshape. In addition, besides using color tracking methods, it is also necessary using the midpoint of the object search method. CMUcam3 equipped by Omnivision CMOS camera module and the Philips LPC2106 ARM7TDMI, where the CMOS camera is used to capture an image sensor then the microcontroller, as a controller, perform image processing that caught. In this system also uses two servo motors to drive the robot, so the robot can move towards to the target object and follow it.*

*The implementation of Color Tracking methods and Midpoint object search methods can be realized and applied to the robot emulator object detection based on color. Light intensity affect the success rate of the robot in the following object. The experiments conducted in three different conditions, in the morning between the hours of 8:00 a.m. to 9:00 has a success rate of 85% and during the day between the hours of 12:00 to 13:00 has a success rate of 95% and at night between the hours of 20:00 to 21:00 has success rate of 10.5%. The delay response from the movement of the servo motor to follow the object is approximately 1.62 seconds.*

*Key word : CMU Cam3, Tracking, CMOS Omnivision*