

ABSTRACT

One technology that is being developed at this time is a robot. Robots should be able to interact with their environment. In order for this interaction can be done, the robot needs to have the ability to recognize its environment. This capability can be obtained by using sensors to capture information from the outside world. One of the sensors that can be used is a camera. The camera sensor has a function to capture information from the outside world in the form of images.

With the camera sensors, mobile robots can be developed to follow the object, for example a human. This function can improve the role of the robot as a human assistant. By following the man wherever he goes, the robot will always be near humans. This role requires a good object recognition capabilities, especially if the man followed in the crowd.

In this final project, color tracking system and occlusion handling system using a Kalman filter on wheeled robot are designed. Robot follows human by tracking the target color and follow the movement of the target. Kalman filter is used as the target position estimator when the target is lost from sight of the robot due to occlusion for time less than 5 seconds. Occlusion is limited to have color value (hue) which is different from the target.

Results from this study is an occlusion handling system with accuracy level for occlusion not move and target move condition is 60% for distance of 1.5 m, 80% for distance of 2 and 2.5 m. For occlusion moves and target not move condition, accuracy rate is 75% for distance of 1.5 m, 80% for distance of 2 and 2,5m.

Keywords: wheeled robots, OpenCV, image processing, view occlusion, color tracking, Kalman filter