ABSTRACT

The emergence of particle filters on November 7th 2011, which was introduced by Eiji ota, making the development of image processing technologies increasingly varied. Particle filter is a filter for particles generated colored object tracking and identifying the location of the object. This method will be implemented on a virtual mouse applications. Virtual mouse is an application that serves to make the operation of the remote computer. This application will utilize the tracking of the marker to move the pointer.

Marker detection is done by webcam. Following the detection of particles - particles that have been generated and subsequently occupied the marker identifying the location so that it can perform the object tracking. Then change the particles that affect the movement of the pointer on the screen. While using the detection of the number of circles to perform mouse event.

The accuracy of the implementation is done by testing the parameters of the distance, light intensity, resolution webcam, change marker color, rgb deviation standard, deviation standard of the position, deviation standard of the velocity. As for circle detection using distance parameters, light intensity and resolution webcam. The best accuracy results obtained at a distance of 50cm at 94,27%, with a resolution of 640×480 webcam in this system scored the best average accuracy of 63,926%, with a light intensity of 120 lumens on this system scored the highest average accuracy of 65,533%, with a standard deviation rgb at 30 on this system scored the highest accuracy of 100%, with standard deviation of positions at 30 on this system obtained the highest accuracy value of 100% and the standard deviation of velocity at 20 on this system obtained the highest value of 100% accuracy. While the detection circle at a distance of 30 cm best results, the resolution of the webcam at 640×480, but the intensity of light 60 lumens and 120 lumens not make some differences on this calibration.

Keywords: Particle Filter, Colour Tracking, Virtual Mouse, Circle Detection, Hough Transformation .