ABSTRACT

Detecting the location of objects using digital principles can be performed with increased processor speeds and increased memory capacity. In this final task has designed a system that can perform a simple object tracking process based on video processing.

The system will map the movement of objects into a coordinate system on the computer with the help of 2 webcam and an embedded programming algorithm on matlab software version 7.4. The output of the webcam is video that will be analyzed and calculated by matlab every frame to see the movement of the object being observed.

This object detection using 3 parameters ie, form factors, colors, and movements. The installation of a webcam is the same in high places and look at the directions perpendicular both of which are connected to one same computer. Extracting frame alternately performed from both webcam every moment to be obtained the center point of object with coordinates x and z in the first webcam and the coordinates y and z in the second webcam.

This system testing process conducted by a board that has 3-axis (x, y, and z) and using 3 kinds of objects like cubes, balls, and a cylinder which has 3 kinds of colors of each object. Movable object in the *xy* plane then the system will display the modelling and projections based on the shape of object into the coordinates on the computer.

Output system based on distance estimates has gradient 0.978 until 1.01 with a correction factor less than 0.7cm and accuracy level is abut 99%. While based on the accuracy of object detection for detecting the object ball reaches 98.3% and the computational speed gained an average of 1 second.

Keywords: Tracking, Shape Detection, Color Detection,Video Processing, Morphology Operation, 3D