

ABSTRACT

Digital Image Processing technology can be used to obtain geometric parameters of an object, such as length, width, height, and diameter. We can derive object's volume and wide from those parameters.

By digital image processing, find the corellation from data of every captured object to real object size and webcam distance to object. To find that corellation, this Final Project used images of four different object shapes in bitmap format. Using linear model $y = mx + c$, y is the ratio of object image size in pixel to a real object size in cm and x is webcam distance to the object. So that we can get the corellation that we want by deriving a same gradient value for every object which is 0.15. Estimation of geometric object parameters works using that linear model with $m = 0.15$.

The result of testing step, a circle shape estimation has accuration level > 80 % with worst estimation failure 0.94894 cm, > 90 % with worst estimation failure 0.7206 cm for rectangle shape, and > 75 % with worst estimation failure 2.371 cm for triangle shape. For kerucut shape, kerucut diameter can be estimated only from less than 0.75m and a height of kerucut only can be estimated from 0.26m dan 0.3m. It because from far distance, kerucut looks like a triangle, so the algorithm used for kerucut didn't work well. On layang-layang, the accuration estimation is above 94 % with worst estimation failure 5.5574. Accuration estimation of trapesium shape is > 91 % with worst estimation failure 8.13921. Last, the accuration for segienam shape is > 90 % with worst estimation failure 9.171875.

Keywords : webcam, capture, digital image processing, estimation