

**EXPLORATION OF OPTICAL PROPERTIES TO ENHANCE THE
ACCURACY IN IMAGE ACQUISITION FOR 3D MEASUREMENT
IN MICROMETER RANGE**



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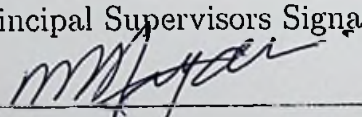
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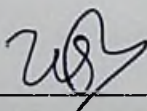
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Abstract

This research is done for finding the variation in edge location with changing light intensity, the basis for this research is that when light is shone on an object and if the intensity is varied it causes the variation of pixel intensity, which in turn is the basis for some pixels to have lower light intensities than the threshold value and thus those pixels will not become a part of edge, resulting in variation of edge location. This will be the cause for the error in the reading if object's dimensional accuracy is required, as experiments are performed for investigation of optical properties to have better accuracy thus the variation in a single pixel of a calibrated image will become the cause of bigger error when worked for length ranging in micro meters. Programs for edge detection and for plotting graphs will be used, data will be acquired from images that are captured during this Thesis by varying light intensity of the sources that are available, measurement of light intensities will be done by LUX meter, this experiment is divided in two parts one is of edge variation measurement with images containing test objects placed side by side and the other experiment which contains a scratch on test objects and the images are processed with individual materials. This research has contributed by providing data obtained through experiments for selection of light for 3D analysis, also data shows that how different lights have their effects on various surfaces.

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