

Abstract

Along with technology progress, distance measurements are widely used in our daily life. For different applications, we have different approaches for distance measurements.

We applied Triangulation Theorem by using laser beam imaging for distance measurement, and calculated the distance between the target and webcam. Firstly, we used Processing software to simulate the theory of laser image ranging. Then, we use the outcomes as a basis to reduce error in the actual measurements.

In actual process, we would have problems, which did not show out in the simulation stage, with accuracy and precision. We applied the least mean square error method to find the gain and offset of that set of equipment for error reduction. Then we applied two webcams for laser imaging rangefinder for wider range of distance measurements, and the error is below 1%.