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Study of Imaged Based Human Height Measurement & Application

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***Abstract*— The paper represents practical improvement in Imaged based human height measurement system. The configuration of proposed measurement is very simple, consisting of one static camera and laser circuitry. Camera takes two frames for processing and angle of camera then it calculates distance with help of laser circuitry. Finally proposed measurement system indicates height of human. Active method used to calculate distance between camera and target.**

***Index Terms*—Active, Application, Distance, Height**

I. INTRODUCTION

Methods for measuring the height to some objects can be divided into active and passive ones. The active methods are measuring the distance by sending some signals to the object (e.g. laser beam, radio signals, ultra-sound, etc.) while passive ones only receive information about object's position (usually by light). Among them, ultrasonic-based and laser-based techniques are the most commonly-used methods. Unfortunately, measurement accuracy via the laser- and ultrasonic-based methods heavily depends on surface reflectivity of the object under measurement. If the reflection surface is undesired, the measuring system generally performs poorly. These methods also have difficulties in recording images of the objects while taking measurement. Alternatively, various image-based methods have been proposed for height measurement over the past years. Human height is seldom estimated alone, but is usually used along with other extracted features like the dynamic properties of gait [1,2 and 3]. Thus extracted parameters are however almost in every case used for identification purposes.

We assume that the subject is standing on the ground, it stands straight and that the horizontal bisecting line of the camera image is Horizontal in the real world as well. In order to determine the height of an object visible on a surveillance camera, we should first determine its distance from the camera. To do this we can use the view angle, under which the bottom of the object (the feet of the person) is visible, the altitude of the camera from the floor and the orientation of its optical axis. If we know the distance, the estimation of height can be done easily from the view angle of the object's top point.

II. ACTIVE DISTANCE MEASUREMENT

Fig. (a) Shows the working of Laser as distance measurement between camera and target. A laser diode generates a pulse of light with an extremely rapid transition from off to on. The light pulse travels toward the target at roughly and illuminates the target surface. Some fraction of the light pulse is absorbed by the target surface, but the remaining energy is re-radiated broadly. This dispersion of the re-radiated pulse results in a return signal level at the photodiode that decreases as the square of the total range.

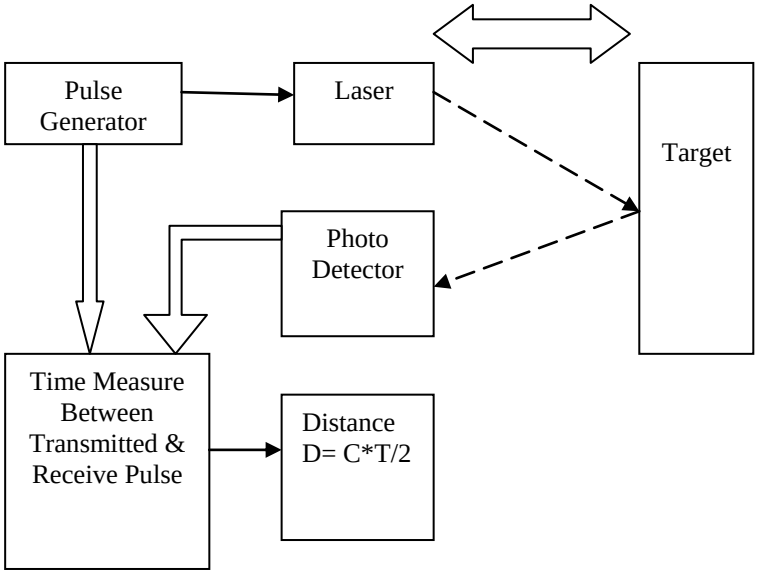

Fig. (a) Distance Measurement with Laser (C= velocity of light)

III. HEIGHT MEASUREMENT SYSTEM

The architecture of purposed work is shown in the Fig. (b) Shapes are segmented from the frames using a continuously synthesized background. To get more accurate bottom and top points of the shape, we should accomplish shadow compensation. Upon having the shapes cleared, the next task is to compensate the effect of the geometrical distortion of the camera, and finally to estimate the height of the shape. The two parameters that are distance and image are applied to software of Images Based Distance Measurement System and it gives output in distance and height of target. Generalize block diagram of system as shown in fig. (c).

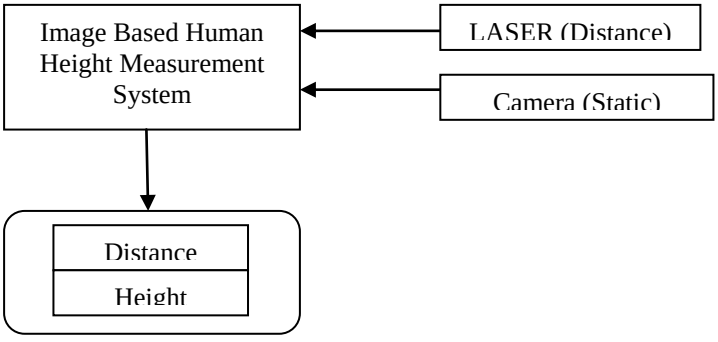

Fig. (c) Generalize Block Diagram

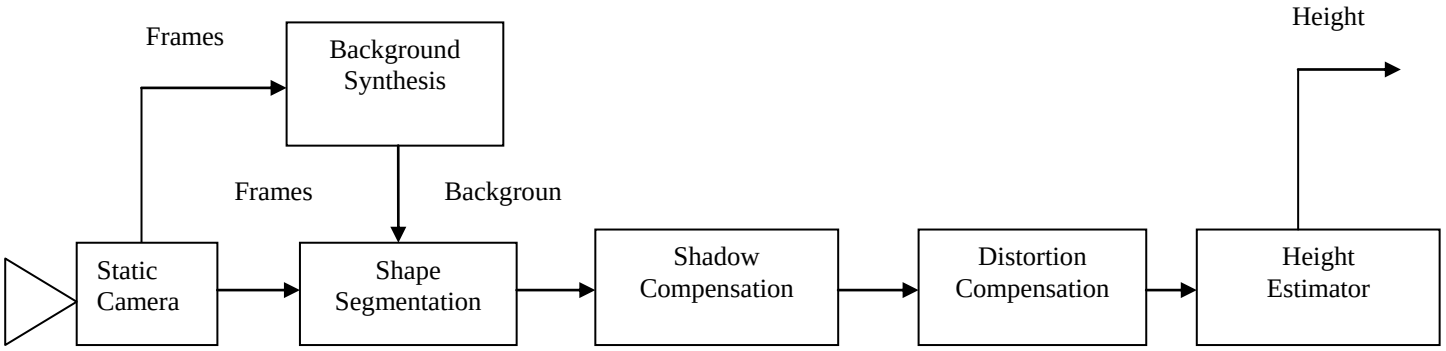

Fig. (b) Height Measurement Framework

I. APPLICATIONS

Image Based Human Height Measurement System has wide applications. We discuss some application in this paper.

A. Person Identification (Security)

The person height should provide more security as compare to only identity card with photo. We should take image of person at entry point and it calculates heights. Calculate height should match with database if matches then we allow that person to enter into area which we want to secure (e.g. cashier section in bank).

B. Online Cloth Shopping

Now day's lots of website are deal with selling online cloths. But customer are confuse can this shirt has perfect for me in size? Then solution is Height measurement of customer. We try to provide such cam as advance feature for laptop which take picture and identify height with help of Image based human height measurement system.

C. Civil Application

This system can also develop to calculate height of building. If contractor know height it calculate are which is required for calculation of budget for painting, number of workers, time required and many more things.

D. Recruitments in Defense

Recruitments in defense in physical section they have to measure height of each candidate manually. If we approach this system it reduces task of recruiters and also save time. It directly display that candidate is eligible or not.

II. CONCLUSION

Image Based Human Height Measurement System provides good advantage for number cloth shops/website to sale their products. It also uses in defense and civil application which need have today's world that is costing building. With active method we get accurate result about height of human.

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