

# Testing the impact of Depth

## The Test

Having two ping-pong balls that are at a known distance from each other (around 20cm), I tested that if the measured distance between the two balls is close enough, and how increasing depth impacts the measured distance.

In order to do this, I used sixty frames for each of the depths I want to measure (which are 1M, 1.5M, ..., 3M).

By moving the ping-pong balls in a certain way throughout these sixty frames, we then find the Mean and the Standard Deviation of the calculated distances for each of the depths.



## The Results

### 1 meter

std: 2.622290  
mean: 20.961314

### 1.5 meters

std: 1.612598  
mean: 19.782260

### 2 meters

std: 2.561723  
mean: 19.785630

### 2.5 meters

std: 2.135731  
mean: 19.545427

### 3 meters

std: 1.956295  
mean: 19.582030

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It can be seen that throughout all the pictures, the metrics' results are rather similar, the slight difference is because there are a small number of outlier frames in which one or two of the blobs' coordinates may have gotten an incorrect value due to the color thresholding and noise. For our use case, It seems as if we

can easily remove the few outlier frames and still get good results.