

Project 2 CSE 573
Raj Jaysukh Patel
Person number: 50208278
Ubit name: rajjaysu

Stereo Vision

1. Disparity Estimation using Block Matching

The Threshold value for matching block is 75. Left Disparity map for 3x3 block with Mean Squared Error with ground truth 47.541964859, before consistency check is as follow:



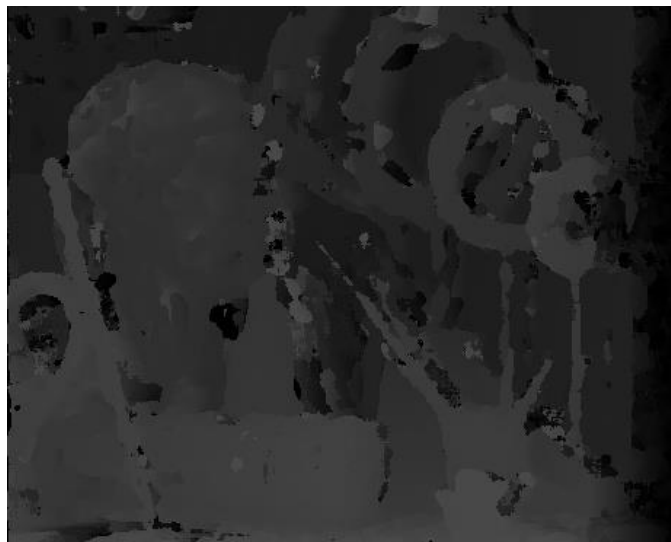
Right Disparity map for 3x3 block with Mean Squared Error with ground truth 46.4031288308, before consistency check is as follow:



Left Disparity map for 9x9 block with Mean Squared Error with ground truth 34.1177222579, before consistency check is as follow:



Right Disparity map for 9x9 block with Mean Squared Error with ground truth 33.2304535637, before consistency check is as follow:



The code for this part is in DisparityEstBlock.py.

2. Consistency Check

Consistency is carried out as a pixel from left Left Disparity map for 3x3 block with Mean Squared Error with ground truth 9.25046407098, after consistency check is as follow:



Right Disparity map for 3x3 block with Mean Squared Error with ground truth 9.32597630027, after consistency check is as follow:



Left Disparity map for 9x9 block with Mean Squared Error with ground truth 5.61875547254, after consistency check is as follow:



Right Disparity map for 9x9 block with Mean Squared Error with ground truth 5.90166365069, after consistency check is as follow:



The code for this part is in DisparityEstBlock.py. So, we can see that some values were falsely predicted which are made zero after consistency check and it resulted in reduction in MSE.

3. Disparity Estimation using Dynamic Programming

The result for Disparity estimation using Dynamic Programming is as follows:



The code for this part is in DisparityEstimation.py.

4. View Synthesis

The Image synthesis for left camera is as follows:



The Image synthesis for right camera is as follows:



The view from center of two camera is as follows:



The code for this part is in ViewSynthesis.py.

Image Segmentation

The iter values is constant 10. And the threshold value is changed



$h = 30$



$h = 60$



$h = 90$



$hr = 30$ and $hs = 30$



hr = 60 and hs = 60



hr = 30 and hs = 90



hr = 90 and hs = 30

The code for this part is in ImageSegmentation.py and ImageSegmentation2.py