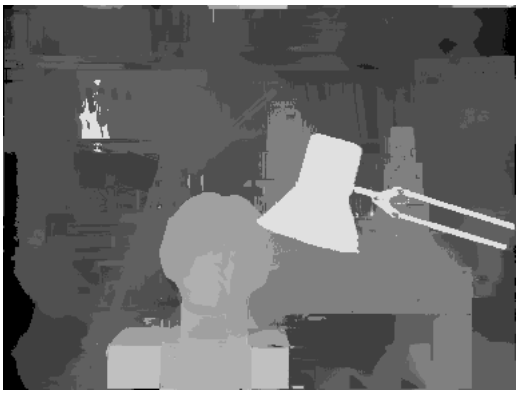
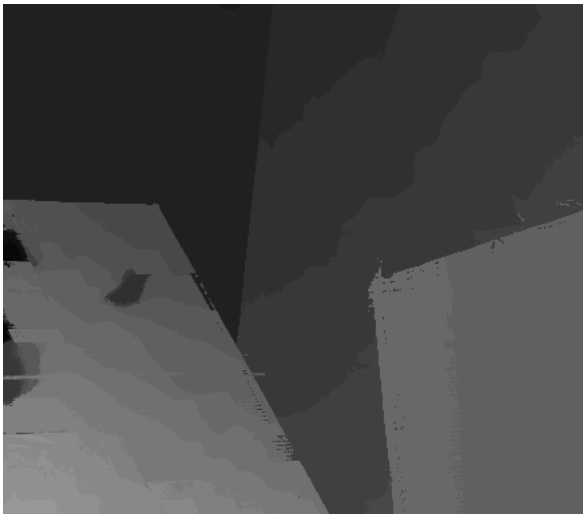
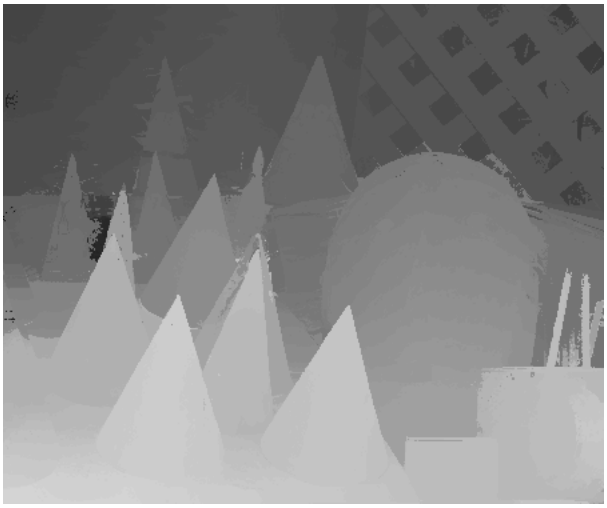
Computer Vision HW4 Report

Student ID: B09901142
Name: 呂睿超

Visualize the disparity map of 4 testing images.

Tsukuba	Venus
	
Teddy	**Cones**
	

Report the bad pixel ratio of 2 testing images with given ground truth (Tsukuba/Teddy).

	bad pixel ratio
Tsukuba	4.42%
Teddy	9.64%

Describe your algorithm in terms of 4-step pipeline.

1. Cost Computation
   Basically, I follow the method to implement the census cost. But, I separate the two steps of comparing with the middle value and calculating the hamming distance.
2. Cost Aggregation
   I followed the hint on the slides. Therefore, I sequentially used the boxFilter, JBF and the guided filter. But after experimenting, I found out that the version that only operates JBF works better.
3. Disparity Optimization
   I implemented the winner take all by np.argmin to obtain the smallest cost of all possible disparity.

4. Disparity Refinement

   Following the hint on the slides, I checked if it has the same value on the corresponding disparity map pixel. Next, I find the closest valid value to fill the invalid holes. Also, I applied weighted median filter to the map in the end.