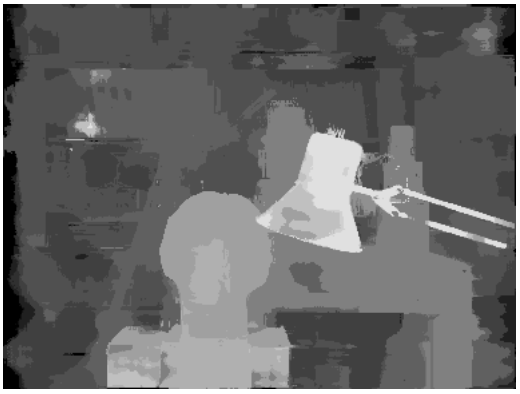
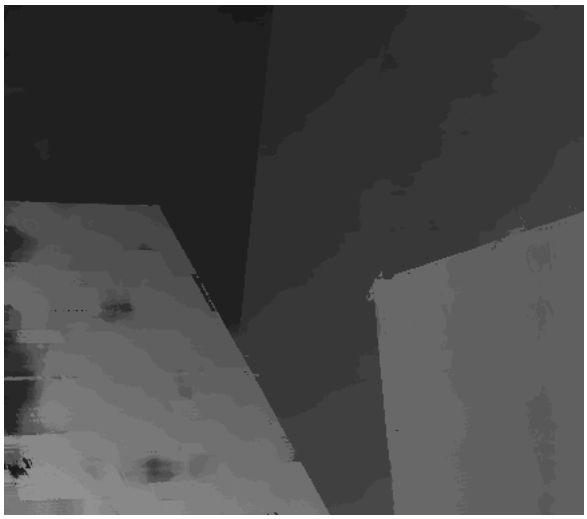
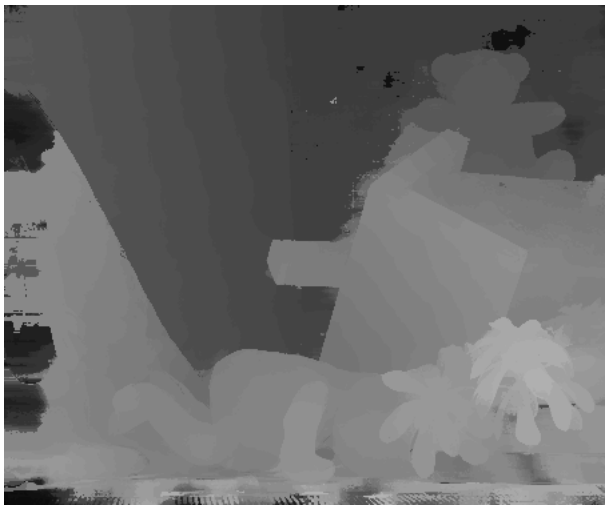
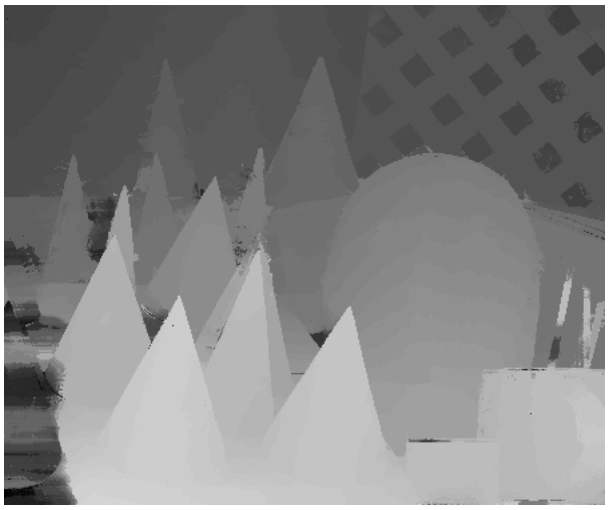
Computer Vision HW4 Report

Student ID: R10943131

Name: 周奕節

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	6.49%
Teddy	12.96%

Describe your algorithm in terms of 4-step pipeline.

Step1: Cost Computation

- **Compute census cost for both images**
- **For each disparity level, shifting one image and compute the hamming distance.**

Step2: Cost Aggregation

- **Apply joint bilateral filter for the cost of each disparity with sigma_r=7, sigma_s=13.**

Step3: Disparity Optimization

- **Get the disparity that minimizes the matching cost for each pixel using winner-take-all approach.**

Step4: Disparity Refinement

- **Performing left-right consistency check to invalidate bad disparity points.**
- **Filling the holes using the nearest valid disparities from either direction.**
- **Applying a weighted median filter with r=11.**