

Preparation:

1. open Matlab, setup mex by typing command "mex -setup" if your mex compiler isn't ready.
2. Install OpenCV-2.4.0.

Installation:

1. Set "pipeline\cy_cpp_lib\rectify" as current folder and save it into Matlab search path.
2. Run compile_cyStereoRectify.m

Notification: you need to modify the path specified in compile_cyStereoRectify.m if your actual installation path of Opencv is different.
3. Set "pipeline\cy_cpp_lib\seg" as current folder and save it into Matlab search path.
4. Run compile_fill_mask_hole.m
5. Run compile_seg.m
6. Set "pipeline\cy_cpp_lib\trw_s" as current folder and save it into Matlab search path.
7. Run compile.m
8. Add "pipeline\cy_matlab_lib" into Matlab search path.
9. Add "pipeline" into Matlab search path.

Demos:

1. demo.m

This program shows how the pipeline process and produces a single frame of mesh.

Usage: Set "pipeline" as current folder and then run "demo.m".

The program produces three .ply files and one .bmp image:

depth.ply a mesh produced by binocular stereo vision

depth_smooth.ply a smoothed mesh produced by applying guided filter to raw depth map

N.bmp a .bmp image visualize the normal map produced by photometric stereo

out.ply final 3d reconstruction result

2. run.m

This program process a video sequence and produces a sequence of mesh.

Usage: set "pipeline" as current folder and then run "run.m".

The program produces two .ply files (0.ply and 1.ply) in "pipeline\out" folder.

Available Functions:

1. Segmentation produce a mask of segmentation.
2. BinocularStereo produce a disparity map and a 3-d point cloud
3. PhotometricStereo produce a normal map
4. ShapeFromNormalAndDepth produce the final reconstructed 3-d point cloud
5. Albedo produce the albedo texture
6. Pipeline wrap “demo.m” as a function

For detail specification of these functions, see the corresponding .m files.

For example of usage and suggested value of parameters, see “demo.m”.

For the meaning of parameters, please refer to my PPT.