Homework 6 - Stereo Data Collection – Due Thur., 9th

•Get the most recent (date: 12/01/2010) zip file from the homework page containing files t06a.exe (executable program), t06a.db2 (copy of previous in case your computer security does not permit uploading .exe's), and pr8a_c_ds.bmp (the anaglyph image file). This one has correct geometry and correct coordinate readout. This is a view of the south corner of the Armstrong engineering building on the Purdue campus.

•Using the anaglyph glasses (red on the left!) spend some time practicing to make sure that you can perceive the 3D measuring mark or "floating mark" moving left/right, up/down, and forward/backward in depth. In a light area the mark is dark, in a dark area the mark is light, for contrast. In the vicinity of a light dark transition, there will be some confusing double or triple cursors, try to just concentrate on the one in the middle which moves in depth. Don't give up without trying hard to see it. If you are unable to perceive the image or the cursor in 3D then write me a note to that effect. There will be no penalty.

•Don't try to resize the window – program behavior is unpredictable.

•The left mouse button increments the counter and records the current point coordinates (ID,X,Y,Z) in a file ('points.txt'). If you exit program and re-enter it will append to the same file.

•Capture vertices to define a "few" polygons of the building. Then make a matlab script as shown in lecture 26 (the slides are also posted) to build a 3D model of what you have collected.

•Note that the depth movement interval is a bit coarse, no quick fix. Sometimes the point is between two available click stops. Just pick the closer one. That will impact the accuracy of your model. A mouse with a wheel is needed to control the depth position of the measuring mark.

•Some points needed to define a polygon may be hidden. You may use reasonable geometric inferences to create those points off-line. The Z-axis is nominally vertical in the scene. Any curved surface would have to be decomposed into polygons. Use a unique coordinate value for each vertex, to avoid gaps and overlaps.

•The anaglyph image was created as described in class by the image normalization procedure and writing the left image into the red channel and the right image into the green and blue channels. Orientation was done by a 2-photo bundle block adjustment as you did for HW5.

•This program is hardwired for this particular image, I will expand it to accommodate other images as well. Contact me later if you are interested in that.

•Depending on the contrast of you monitor, you may be able to see the 3D better if the room lights are low or off.

•The coordinate units are meters.

•There are some features (people) who are visible in one image but not the other one, you just have to ignore them.

•This was taken with another camera with only an approximate calibration so that will also limit the accuracy of the model.

•The bottom of the band at the near corner of the building should have coordinates near (X,Y,Z) = (100,200,20) make sure you agree with that before starting collection.

•Turn in your matlab script to create the 3D mode, a graphic of the resulting model, and also the .fig file (saved from the figure).

Copy all of the given files into the same folder. Execute the program either from a command line or by browsing to the t06a.exe file using the "run" command.