Stereoscopic Depth Mapping Team

Project Plan, Timeline, and Preliminary Research

# Project Plan

We plan to split the project into three phases – determining and implementing the best point-matching algorithm, implementing the stereo depth mapping algorithm, and determining and implementing 3D object face detection. If time permits, we would like to implement a 3D rendering of the scene as determined from the stereo depth information and the object face detection.

If time does not permit, we will choose to only implement a point-matching algorithm and depth-mapping algorithm, as we know that both of these can be implemented in a reasonable amount of time. Both of these algorithms are fairly well studied and should be easy to implement within the timeframe given.

# Timeline

End of Week 1 – Determine, Implement, and Benchmark Point-Matching Algorithm. Prepare test set of image data.

End of Week 2 – Implement Stereo Depth Mapping Algorithm

End of Week 3 – Begin to implement 3D object face detection and prepare for demonstration and class presentation

# Research

Since the literature review, we have setup a Git repository for our code, images, and documentation.

After doing some preliminary research as part of the literature review, we believe that one of our best hopes for a point-matching algorithm is one of the HMATCH or C2MODEL/LMATCH algorithms described in the SRI paper. We will still need to experiment to see if the rough camera parameters from C2MODEL are accurate enough for LMATCH to work sufficiently, which will be done once we have an actual implementation. In addition, we will attempt to manually calibrate a camera and get the camera parameters to compare them with the parameters derived by C2MODEL.

For the depth-mapping portion of the project, we know the simple trig for calculating the depth in terms of pixels, and we can map from pixel size to physical size.