3dscanner

Anything updated or added since the initial project report is red
Progress Report 1

Members

- Matthew Diamond
- Sean Cascketta
- Nishant Gupta
- Miguel Del Valle

Topic/Objectives

We plan to write a program that will extract 3D models of scenes from videos taken with the Nintendo 3DS.

- **Objective: Understand the AVI file format produced by 3DS systems**
  - Result: two separate video streams for the left and right camera to make processing simple
  - Result: code that allows OpenCV to properly interpret a single video stream that contains a stereo pair of images for each frame as two separate video streams
  - Work required: research
  - ~~Achievable by 11/13/14~~
  - **Completed!**
    - See process_3ds_video.sh and process_3ds_video_info.md
    - Examples of output can be found in test_data/videos
- **Objective: Reconstruct a 3D scene using a single stereo image pair produced by 3DS systems**
  - Result: a proper tuning of the StereoSGBM class in OpenCV that will produce a disparity map that appears to be correct
  - Result: a 3D point cloud of the scene that appears to be an accurate reconstruction
  - Work required: documentation reading/experimentation
  - Achievable by 11/20/14
  - We have not yet been able to get a satisfying disparity map
    - See 3dscanner.py
      - It is still very much a work in progress
- **Objective: Track 3DS camera position**
  - Result: Information regarding the extrinsic parameters of the camera

- ○ Work required: documentation reading/looking at examples or tutorials/experimentation
- ○ Achievable by 11/20/14
- ○ We have no progress towards this goal
    - ■ We are still researching how to accomplish this
- **Objective: Properly rectify multiple 3D scenes together**
    - ○ Result: a point cloud of a single scene that has been composited together from multiple angles of the same scene with a visually satisfying degree of accuracy
    - ○ Work required: documentation reading/ looking at examples or tutorials/research/experimentation
    - ○ Achievable by 11/20/14
    - ○ We have no progress towards this goal
        - ■ We are researching how to accomplish this, looking into space carving
- **Objective: Final product**
    - ○ Result: A python script that will take as input a single AVI file produced by a Nintendo 3DS system and output a 3D point cloud of the scene in the video with a visually satisfying degree of accuracy
    - ○ Work required: everything else must be complete
    - ○ Achievable by 12/2/14