CS 63500
Spring 2010
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Due: Monday February 28 at 6:00am

Assignment 3—Panoramas

In a nutshell

Implement an application to build a panorama by stitching together photographs and then to examine the scene in any direction from the center of the panorama.

Details

1. Input photos
    a. Take at least 5 overlapping photographs
    b. Perform an approximate calibration of the intrinsic parameters of your camera (OK to use the results of previous assignment)
2. Extrinsic registration
    a. Register 2 consecutive images at the time
    b. Use an error function based on the color difference at the region of overlap
    c. Use a (0, 0, 0) initial rotation guess
    d. Using a brute force optimization is OK
3. Panorama stitching
    a. Build a cube map panorama
    b. Blend between images at the region of overlap; the user should be able to turn on and off blending through the GUI
4. Rendering
    a. Allow the user to pan, tilt, roll, and zoom from the center of the panorama
    b. Make a 10 second 30 frames per second 640x480 video showing off rendering from your panorama
5. Extra credit
    a. A panorama with a 360 degree field of view (2%)
    b. A complete panorama (3%)
    c. Acquire two panoramas and connect them with a video tunnel (3%)

Turn in

Upload archive on Blackboard containing:

- Your source code and binaries
- Your input image(s)
- Your movie
- README.txt file with GUI description and a list of extra credit features attempted