

Description:

The objective of this exercise session is to implement the knowledge acquired on the stereo vision. The major focus will be on epipolar geometry and triangulation based 3D reconstruction.

Exercise:

The main file for this exercise is *Epipolar_Geometry.m*. The following steps must be followed in this exercise:

1. Manually obtain 8 corresponding points from the two images stereo1 (left) and stereo2 (right). There is a MATLAB function called *clickPoints* which may be helpful for you.
2. Inside a MATLAB function called *matF.m*, Calculate the fundamental matrix with 8 point algorithm using SVD. You can use the reference: Chapter 11, Multiple View Geometry in Computer Vision.
3. Calculate the Epipoles of two cameras. You can use the reference: Chapter 9, Multiple View Geometry in Computer Vision and download link: <http://www.robots.ox.ac.uk/~vgg/hzbook/hzbook2/HZepipolar.pdf>
4. Implement a function called *click(leftImg,writeImg,F)* which will allow you to see the epipolar line in the right image corresponding to any point in the left image. That means, if you click one point in the left image you should see the epipolar line in the right image.

In the report, you must:

- Give your comments about the influence of the choice of 8 pairs of points on the epipolar geometry. Use the points saved in the file *betterPointsX1X2.mat*. Are you getting better result now?
- If you are not getting exact epipolar lines then write your opinion for this reason?