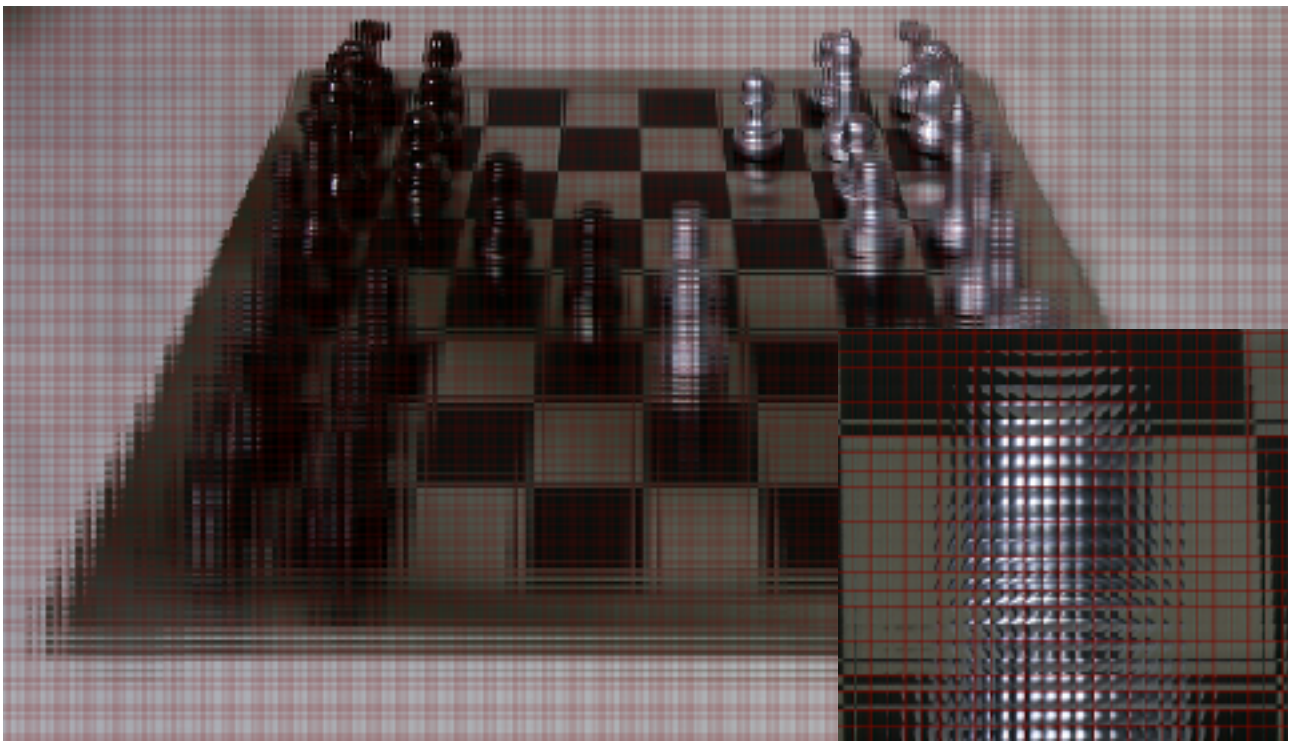
LAB 7: DUE 15 JANUARY 2016

Task 1: Aperture view(40 pts)

Write a function that outputs an image visualizing the light field as a set of aperture views. Assuming the size of the y and x dimensions of the light field are h and w, the aperture visualization should be an Nh×Nw picture composed of h×w sub-pictures representing the value of each pixel in each of the N × N views. You can add a one pixel boundary between apertures for visualization. You can choose the light field of your preference, some are provided, you can download more from http://lightfield.stanford.edu/lfs.html and http://web.media.mit.edu/~gordonw/SyntheticLightFields/index.php



Task 2: light field slice(10 pts)

Load the images and plot for a central line of the light field, all the horizontal views. You have two types of data sets, 9x9 and 17x17 images.The slices should have 9 or 17 lines, but you can scale it up in that axis for easier visualisation. These are called 2D Epipolar Images. Do the same for the vertical views. Try with different light fields. You only need to this for one line in this task.

Task 3: Focal stack (50)

Create images with focus at different distances from the light field. You can put them together in a short video/GIF. Use the center view. You simple have to shift away from the center, or towards the center by a distance proportional to the depth. The distance between views is the same, so the relationship between the displacements should be proportional. The second task should give you an idea of how much you have to displace the images, and its range. You can do this for a couple of apertures, 17 and 5 (for example). This will mean to average 17 or 5 pictures in each direction respectively.