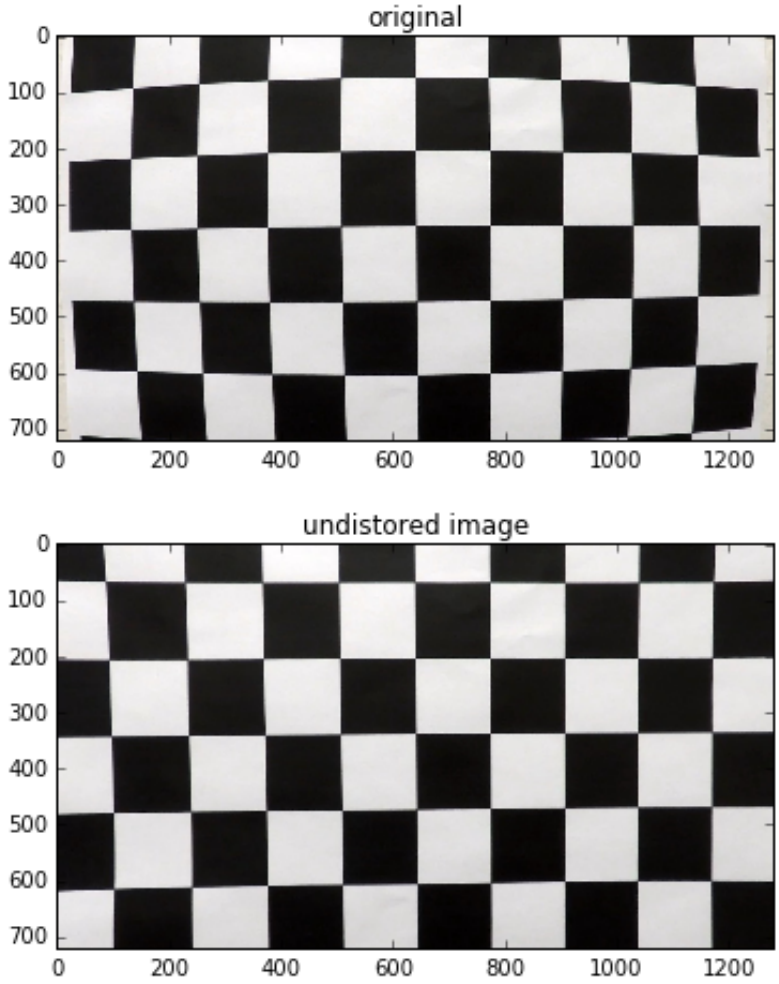
Camera Calibration

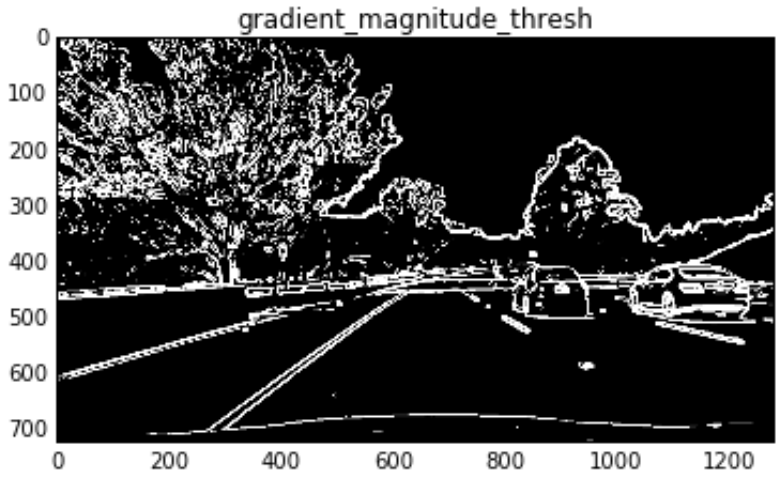
I use opencv to perform camera calibration.

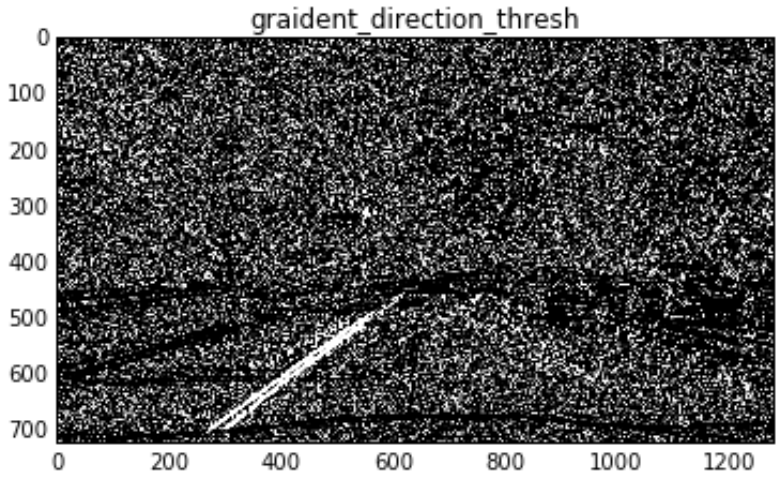


Processing Pipeline

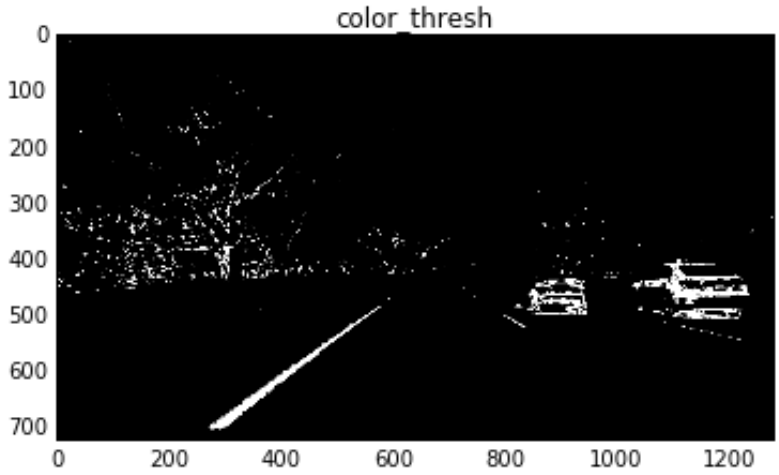
1.Camera Calibration

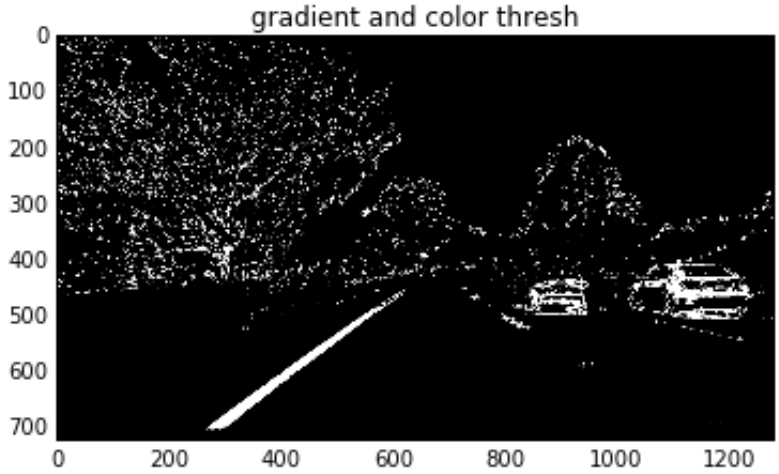
2.Graident magnitude/direction threshold: I use graident magnitude and direction to extract lane edges.



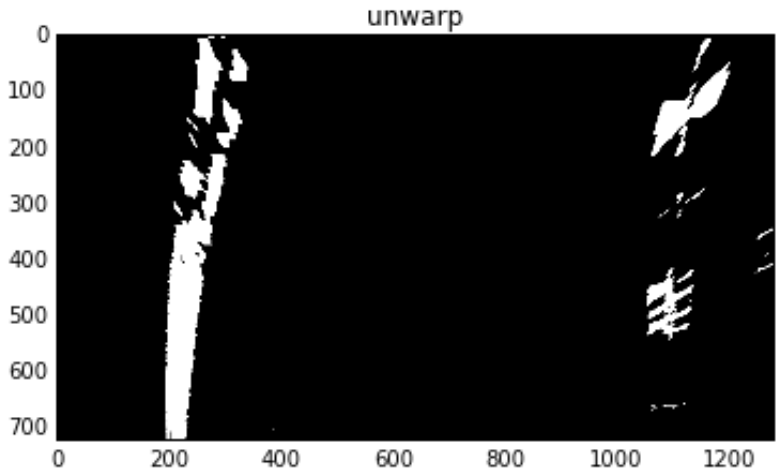


3.Color thresh: I use saturation of HLS to extract color feature.

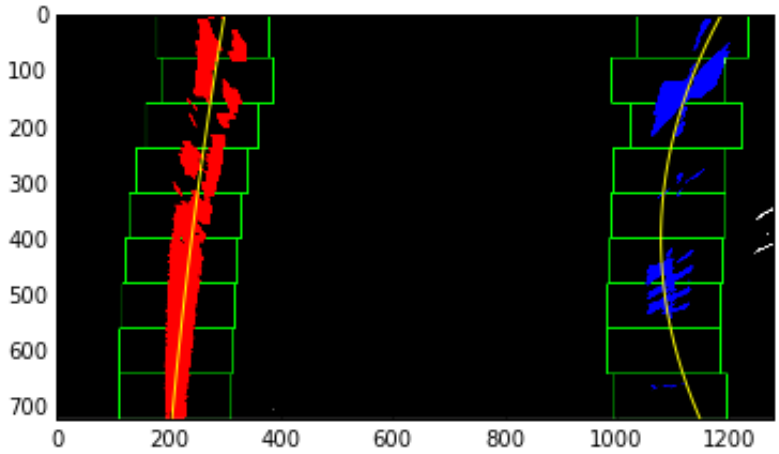




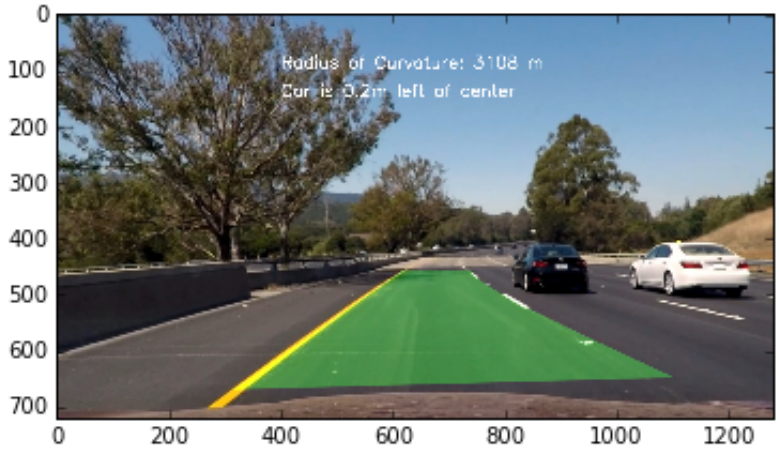
4.Perspective transformation: just like camera calibration, get a transform matrix between two images, and use this matrix to perform perspective transformation.



5.histogram/sliding window to find lane lines: first use histogram to find peak of the bottom of image, and start from that peak, use sliding window to bottom-top search, finally fit the points with polynomial.



6.curvature and deviation: when we get the polynomial coefficients, we can compute the curvature. To compute deviation, I use the bottom position of two lanes to compare to the center position.



Problem

I think the polynomial fit part is not perfect now, because the right lane sometimes is over bend, and cause curvature to be over large. I will do it better when I have time.
I think When two lanes are all imcomplete, it will be harder for recognize the lane lines.