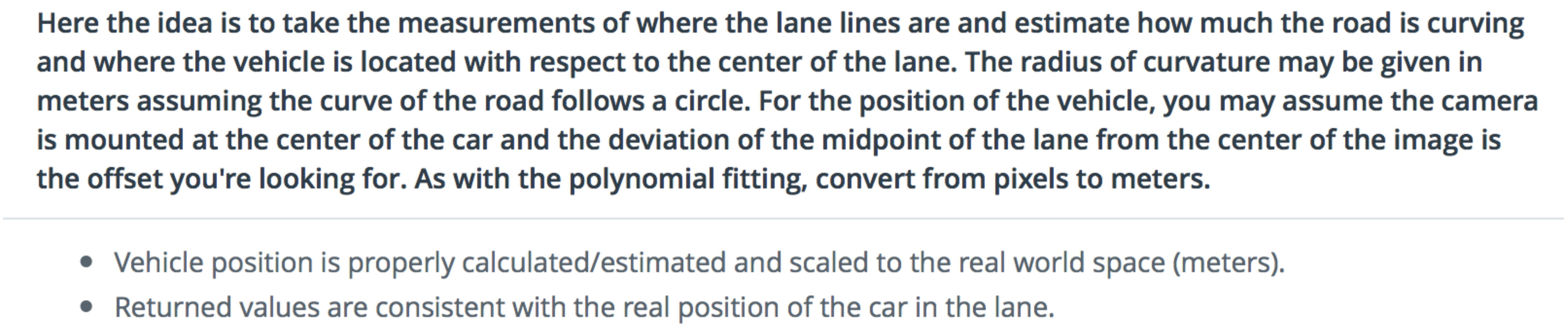
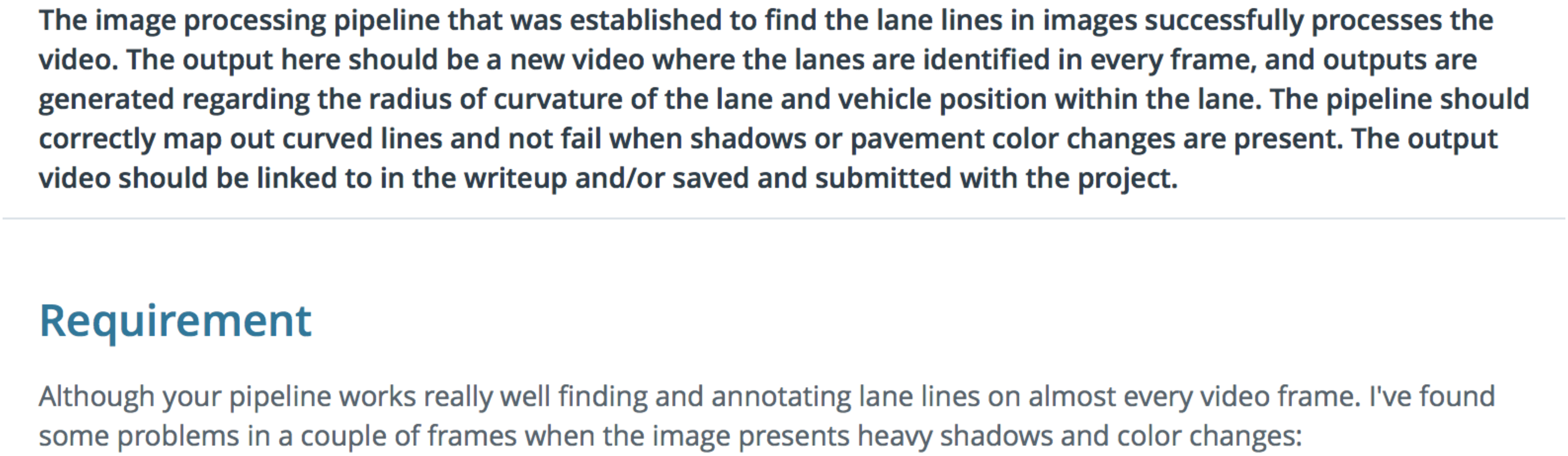


Here the idea is to take the measurements of where the lane lines are and estimate how much the road is curving and where the vehicle is located with respect to the center of the lane. The radius of curvature may be given in meters assuming the curve of the road follows a circle. For the position of the vehicle, you may assume the camera is mounted at the center of the car and the deviation of the midpoint of the lane from the center of the image is the offset you're looking for. As with the polynomial fitting, convert from pixels to meters.

- Vehicle position is properly calculated/estimated and scaled to the real world space (meters).
- Returned values are consistent with the real position of the car in the lane.

1. **ok， I change the line fit from 3rd order eq back to 2nd order eq, as 3rd order eq is a little overfit to generate a a little complex curve**
2. **and now below is my codes to caculate the readius:**
    1) left_curverad = ((1 + (2*left_fit_cr[0]*y_eval*ym_per_pix + left_fit_cr[1])**2)**1.5) / np.absolute(2*left_fit_cr[0])
    2) right_curverad = ((1 + (2*right_fit_cr[0]*y_eval*ym_per_pix + right_fit_cr[1])**2)**1.5) / np.absolute(2*right_fit_cr[0])
3. **Yes,with ym_per_pix/xm_per_pix(meter per pixel,scale the pixel radius by above codes to real world space**



The image processing pipeline that was established to find the lane lines in images successfully processes the video. The output here should be a new video where the lanes are identified in every frame, and outputs are generated regarding the radius of curvature of the lane and vehicle position within the lane. The pipeline should correctly map out curved lines and not fail when shadows or pavement color changes are present. The output video should be linked to in the writeup and/or saved and submitted with the project.

Requirement

Although your pipeline works really well finding and annotating lane lines on almost every video frame. I've found some problems in a couple of frames when the image presents heavy shadows and color changes:

1. **Thank you for your suggestion,I have read the article of solutions you gave me,as the coming of end of term1,I have to try that later.**
2. **To pass the submit right now,I do some major modificaiton as below:**
    1) *Change the width of the windows +/- marginminimum number of pixels found to recenter* ***window(21st line in line_fit_video.py)***:
        1) **Margin 80→100** biger search window to fit
    2) *Change minimum number of pixels found to recenter window :*
        1) **minpix = 50→100** more pixels to fit
    3) 3rd order eq → 2nd order eq,lower the overfit
    4) Remove codes from **line_fit_video.py(line73~77)** to smoth the line fit by fits of past frames,that codes I I want to give the pipeline a change to slow fit to correct the pass error,but it did not very well…
    5) And last,change **the perspective matix** matrix by redining the source points and destnation points as in the 6th code cell in ipynb