

CarND Project 1 - Lane Finding

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This project is the first project for Udacity CarND program.
The project goal is to find and label lanes on the freeway.
My pipeline produces the result meeting the project goal.

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1. Describe the pipeline.

The key in my pipeline is in setting the right parameters for Hough transform. I did not guess its parameters due to the insight I gained from hand-coding my own Hough transform. The insight is to use the "threshold" parameter to filter out the peaks in the Hough space.

The rest of my codes are almost the same as stated in the lecture. I did not modify the line drawing function.

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2. Identify potential shortcomings in the pipeline.

My pipeline sucks in the challenge video. Maybe due to different RoI.

Another shortcoming is the assumption of prior domain knowledge. Specifically, we know the correct range of lane slopes with respect to the camera.

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3. Suggest any improvements.

We can replace RoI function with a deep CNN detection.

Hough works on curve too. Just change the equation from line to parabola, $y-y_0 = r \cdot (x-x_0)^2$, and now the Hough space becomes 3D in x_0 , y_0 and r .