Vanishing Point

What is the vanishing point?

The vanishing point is a concept in perspective drawing and imaging, where parallel lines that recede into the distance appear to converge at a single point on the horizon. This point is known as the vanishing point.

The following image is chosen for demonstration

Methodology to estimate the vanishing point

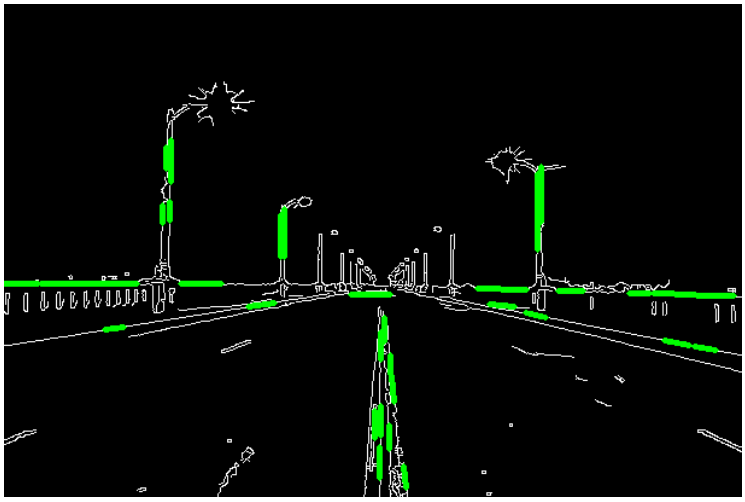
1) Detect the edges in the images

- The image is first converted to grayscale.
- Gaussian blur is then applied with a kernel size of 3 to reduce noise
- Canny edges detection is applied

2) Detect lines in the image

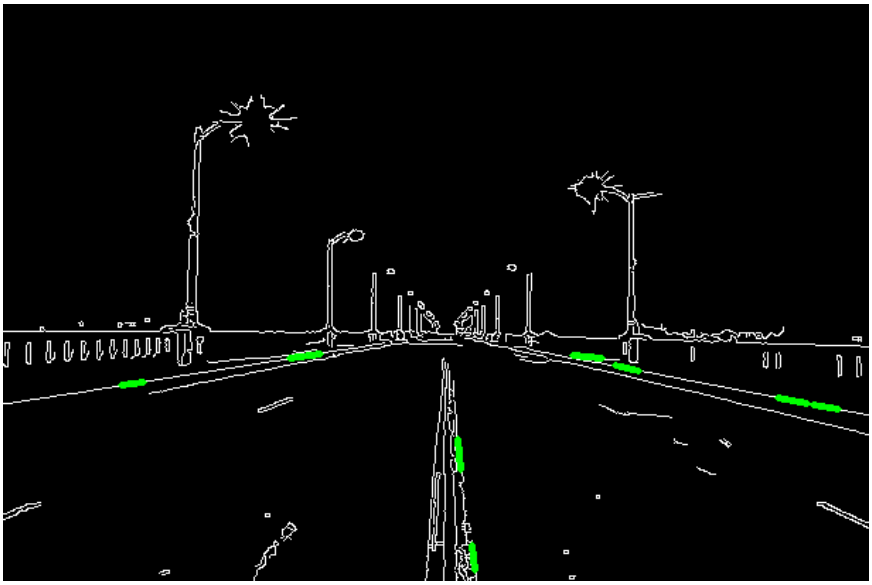
The Hough-Transform is used to detect the lines in the image with following parameters

- Rotation angle limit of -90 to 90
- Resolution of normal distance to origin = 1
- Resolution of line direction = 1 degree



3) Filter detected lines

The lines are filtered based on the length of the lines and an angular threshold of +- 4 degrees as these lines make the estimation less accurate



4) Finding Vanishing point

The vanishing point is found by considering the intersection points between all possible pairs of line and then defining an error function sums up the distance between each intersection (x0, y0) and the point of intersection of each line with respect to its perpendicular (x', y')

The intersection point with the lowest error value is considered as the vanishing point