

## Part 2 Detecting Objects:

Convolution of an image with kernel is implemented and the one with separable kernel takes less time.

Sobel operator is used to detect edges in an image and the threshold is kept after testing for different values, the one with the highest accuracy is taken as the threshold.

### Car detection:

We have used manually cropped template to detect cars in a parking lot. There are some tricks that are used after analyzing the images carefully. We tried by matching templates of a car inside an image and took the most matching ones (based on confidence) but that did not give us a good output since the pixels are randomly distributed for each car based on each shape and size.

We then calculated the number of pixels inside a template and tried to match that for each image, for the algorithm to recognize a rectangle to be a car. It kind of works because there are very few edges except for trees and parking lines that could be detected as cars and even for them it is very less. The algorithm gets the car positions though not accurately and suffers especially for Plaza.png.

The algorithm works only for the given images as we do not have the template for unknown images and hence the threshold, lower limit and upper limit must be redefined for the new image.