**Car Outline Detection and Tracking**

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# **Proposal**

For our project, we would like to detect and track the outlines of cars in various scenes. The focus of our project will be on implementing outline estimation as described in the paper *A Computer Vision Framework for Detecting Dominant Points on Contour of Image-Object Through Thick-Edge Polygonal Approximation* [1]. We will use an existing background subtraction method to detect foreground objects, and then convert these blobs into binary masks, a suitable format for the algorithm described in the paper. With these binary masks, we will perform outline estimation through thick-edge polygonal approximation.

We will be using background subtraction from a background subtraction library implemented in OpenCV [4]. This will give us a foreground mask. This mask will be used as a binary image input into the outline algorithm. By creating a low polygon accurate approximation, we can more efficiently represent the object for visualization, collision detection, tracking, and other tasks. We also gain far more accuracy when compared to standard bounding rectangles. For the dataset, we will begin by testing on cars and other objects from the 2007 Advanced Video and Signal based Surveillance IEEE conference [5]. We will then test on foreground objects in real time using a webcam.

# **Papers**

[1] <https://link.springer.com/chapter/10.1007/978-981-10-2035-3_54>

[2] <http://dl.acm.org/citation.cfm?id=67194>

[3] <http://ieeexplore.ieee.org/document/542646/>

[4] <https://github.com/andrewssobral/bgslibrary>

[5] <http://www.eecs.qmul.ac.uk/~andrea/avss2007_d.html>