# LIVE CAPTURING AND VIDEO TRACKING

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## ABSTRACT

The histogram of oriented gradients descriptor is one of the best and most popular descriptorsused for pedestrian detection. Unfortunately this technique suffers from one big problem: speed. Like mostsliding window algorithms it is very slow, making it unsuitable for any realtime application.The HOG detector is a sliding window algorithm. This means that for any given imagea window is moved across at all locations and scales and a descriptor is computed. For thatwindow a pretrained classifier is used to assign a matching score to the descriptor. The classifierused is a linear SVM classifier and the descriptor is based on histograms of gradient orientations.Gradient orientations and magnitude are obtained for each pixel from the pre-processed image. If a color image is used the gradient with the maximum magnitude (and its correspondingorientation) is chosen. This is done by convoluting the image with the 1-D centred kernel[-1 0 1] by rows and columns. Several other techniques have been tried (including 3x3 Sobelmask or 2x2 diagonal masks) but the simple 1-D centred kernel gave the best performance (for pedestrian detection).The first is the idea ofusing appearance information, whose importance in object detection has been widelydemonstrated [26, 28], and specially the idea of combining cues with the HOG descriptor, e.g., co-occurrence HOG [29], color HOG [24], etc. It has been largely demonstrated by the proposal of different descriptors that appearance is an important cue forobject detection. The second source is the increasing trend of using segmentation forboth detection and segmentation, which in our case has the potential of highlighting theshape of the human.

**KEYWORDS**: HOG, SVM, Image Segmentation, Video Segmentation