This paper proposes a method of constructing a contour-based classifier to remove the false positive objects after Haar-based detection. During the training, the oriented classifier is introduced to construct strong learners. Experimental results have demonstrated that the proposed method is feasible and promising in the removal of the false positive. The workflow of this method is illustrated in the image below.

**About This Paper**

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**Brief Instruction of Haar-Based Detector (Viola-Jones)**

- Integral Image
- Haar-like Feature
- Cascade Architecture
- Constant Time (Speed Advantage)

**Brief Instruction of Contour-Based Classifier**

- Contour classifier consists of two parts:
  - Chamfer Distance
  - Edge Orientation Measure

**Detection with Oriented Edge**

- Orientation image is an edge map generated by canny edge technology.

**Distance Transform**

- This is an illustration of distance transform. Every pixel in this image is labeled a value according to its distance from the nearest edge pixel.

**EXPERIMENTAL RESULTS**

- TABLE

<table>
<thead>
<tr>
<th></th>
<th>Samples</th>
<th>Positive</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>False positive</td>
<td>138</td>
<td>127</td>
<td>92.029%</td>
</tr>
<tr>
<td>True positive</td>
<td>212</td>
<td>205</td>
<td>96.698%</td>
</tr>
</tbody>
</table>

In the Caltech dataset, the classification accuracy is high enough, 92.029% and 96.698%, respectively, for correctly distinguishing the false positive and true positive images.