Training Classifiers

Training Classifiers

The Viola-Jones Algorithm

Training Detection

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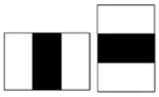
Edge Features



Line Features

Four-Rectangle Features

Training Classifiers

"JD"

In here, it's important that the algorithm understand that which features are important for example it might detect the beard as a very important feature which not everybody has a beard or for example it detect something on the background.
So, in here, the algorithm do two things. 1- Identifying the features 2- setting up the thresholds

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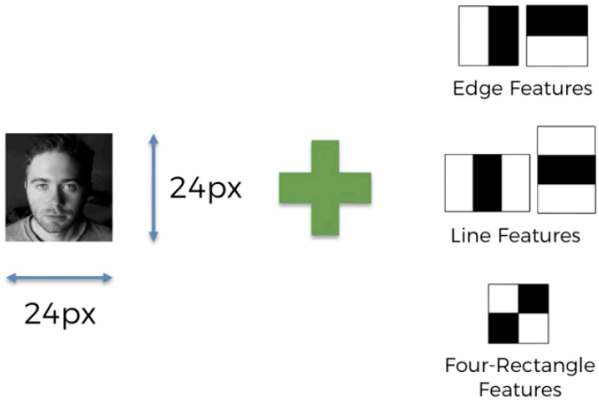
First algorithm shrinks the image to the 24x24 pixels because it's much more less combination and so it's faster. At the end we scale it back to its original size.

Training Classifiers



Then it look for which of these features are common in the pictures.

Training Classifiers

Face Images

We need a large dataset of images in order to avoid picking up the features that are not important.
In the paper of the Allan Jones, they did this algorithm on the dataset of the 4916 images. There is a trick for making more images and that Is to take all of the images and mirror the faces from left or right so we have new faces and also with twice dataset. So at the end it was somewhere around 10’000 images.

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Face Images

Non-Face Images

To make sure that the features that we have detected are common only for faces then we also train some non-face images in order to avoid some errors that it might happen if we have some other non-face images.
Note that for the images of the non-face there is no need to scale it to the 24x24 pixels and we can apply it without scaling.

Additional Reading

Additional Reading:

A General Framework for Object Detection

Constantine P. Papageorgiou et al. (1998)

Link:

https://www.researchgate.net/publication/3766402_General_framework_for_object_detection