Face detection in a video sequence - a temporal approach

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Abstract

This paper presents a new method for detecting faces in a video sequence where detection is not limited to frontal views. The three novel contributions of the paper are : 1) Accumulation of probabilities of detection over a sequence. This allows to obtain a coherent detection over time as well as independence from thresholds. 2) Prediction of the detection parameters which are position, scale and pose. This guarantees the accuracy of accumulation as well as a continuous detection. 3) The way pose is represented. The representation is based on the combination of two detectors, one for frontal views and one for profiles. Face detection is fully automatic and is based on the method developed by Schneiderman. It uses local histograms of wavelet coefficients represented with respect to a coordinate frame fixed to the object.

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1. Introduction

In the context of video structuring, indexing and visual surveillance, faces are the most important "basic units". If the application is, for example, to identify an actor in a video clip, face detection is required as the first step.

Existing approaches either detect faces for every frame without using the temporal information or they detect a face in the first frame and then track the face through the sequence with a separate algorithm. This paper presents a novel approach which integrates detection and tracking in a unified probabilistic framework. It uses the temporal relationships between the frames to detect human faces in a video sequence, instead of detecting them in each frame independently.

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The rest of the paper is skipped here, and the text sections below are the assignments for the Week 2.

2. A exemple of citation

Here is a exemple of citation[1].

3. One math formula

$$Var(S) = \sum_{i=1}^{S} w_i S^2 - Mean(S)^2$$

4. One table

Method	XXXX
Theirs	XXXX
Ours	XXXX

Table 1. Example of table.

5. One image

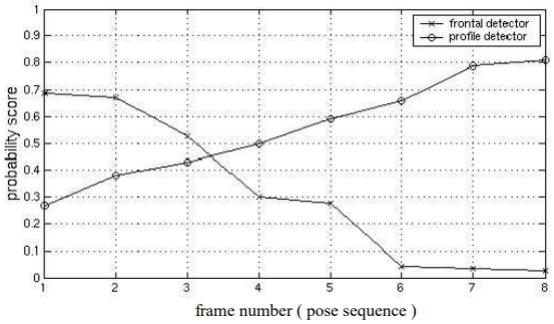

Figure 1. Example of image.

References

[1] Mikolajczyk Krystian, Choudhury Ragini, and Cordelia Schmid. Face detection in a video sequence - a temporal approach. IEEE Computer Society Conference on Computer Vision and Pattern Recognition, 2001. 1