a similar approach. This kind of techniques have the following difficulties: the time for adjusting the model could be long and the choice of the initial position o is quite difficult.

- The second kind of approaches relies on building a classifier which processes con images, and indicates if it corresponds to a face or not. Turk [7, 8] uses a principal co analysis. Neural nets are used in [5].

2   The Data Base

In order to detect some specific elements in an image, it is necessary to describe the prim that must be detected in a way which is compatible with the used algorithm. One of the n advantages of some advanced neural net architectures is their ability to process raw (or almost r images. The problem of finding (and computing) the appropriate representation for the classif is greatly facilitated. Our database is composed of many examples of small-size images of "face and "non-faces".

2.1   Formation of the data base: image acquisition

Twenty eight volunteers of both sexes, and various ages, were asked to walk towards a camera, starting from a distance of 5 meters from the camera, to a distance of about 3 meters from the camera. The subjects were asked to talk, and change facial expression, and head attitude, while walking. To make the problem simpler, we ask the subjects who wore glasses to take them off. Indeed the glasses reflect light and can introduce highlight in the images. Because of the varying distance of the subjects from the camera, the size of the observed faces had widely varying sizes (the ratio of the size between the different images of the sequence is 3). To take into account the variations in lighting conditions, we acquired two sequences of images: in the first one, there is only one light behind the camera, in the second one, there were also more diffuse lighting. A supplementary sequence, without faces, was acquired.

The images were smoothed with a zero-mean Laplacian filter. They were also normalized for the mean and the standard deviation. The mean of the pixels of each image is set to 0 and the standard deviation to 1.

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