The proposed age estimation algorithm ~~realises~~realizes hierarchica~~ca~~l approach (F~~f~~ig. 10).

First~~ of all~~, the input fragments are divided into~~for~~ three age groups: less~~smaller~~ than 18 years old,~~ from~~ 18–~~-~~45 years old, and more~~bigger~~ than 45 years old. Second,~~Afterwards~~ the results of this~~ in the~~ first step~~age~~ are further~~more~~ subdivided into seven smaller~~newer~~ groups, ~~with~~ each limited~~ing~~ to a~~one~~ single decade. This reduces~~hus~~ the original~~problem of~~ multiclass classification problem~~is therefore reduced~~ to a set of binary "~~"~~one-against-all"~~"~~ classifiers (~~;~~ BCs). Each~~These~~ classifiers~~ calculate:~~ then ranks the~~of~~ images~~each~~ based on~~of~~ the ~~a~~associated~~nalyzed~~ class, and~~.~~ t~~T~~he final~~total~~ decisions are~~is~~ obtained~~ then~~ by~~ the~~ analyz~~s~~ing~~s~~ these~~ previously received~~ rank histograms~~ of ranks~~.

~~A two-level schemes of~~ These ~~binary classifier~~BCs are constructed using a two-level approach. After ~~ion is applied~~ first~~with the~~ transitioning to an adaptive feature space, as~~ equal to this~~ described earlier, the images are~~,~~ classified using~~and~~ support vector machines~~s~~ ~~classification~~ with~~-~~ radial basis function~~RBF~~ kernels.

The i~~I~~nput fragments are~~were~~ preprocessed~~ for their luminance characteristics~~ to align and~~ to~~ transform their luminance characteristics~~them~~ to a uniform~~al~~ scale. This p~~P~~reprocessing step includes color-space transformation and scaling, both operations similar to those used in the~~that of~~ a gender recognition algorithm. Features~~,~~ are calculated for each colo~~u~~r component and~~, are~~ combined to form a uniform feature~~ed~~ vector.

Training and testing require a sufficiently~~huge~~ large~~enough~~ color~~ing~~ image database.~~:~~ Here, w~~W~~e combined~~used~~ the state-of-the-art~~ image databases~~ MORPH and FG-NET image databases with our own image database, gathered from ~~many~~ different sources and~~, which~~ comprising~~ed of~~ 10,500 face images. The f~~F~~aces i~~o~~n the images were detected automatically by the AdaBoost face detection algorithms.

Comment [A1]: "First of all" is not incorrect, but it is unnecessarily verbose. In addition, simply using "First" makes the presentation more uniform if you go on to discuss "second" or "third" points, for example.

Comment [A2]: The words "smaller" and "bigger" are typically used to, say, discuss the size of objects. If you want to compare numbers, "less than" and "more than" (or "greater than") are more appropriate.

Comment [A3]: Here, "histogram of ranks" is not wrong, but feels awkward and unnatural. Often, we can take a phrase such as "A of B" and turn it around like this to give just "B A," eliminating the "of." (Note that now, "rank" is singular.)

Comment [A4]: Here, "to align and to transform" is not wrong, but sounds awkward. When using an "A and B" construction like this, we typically keep the A and B parts as small as possible, placing any common parts before the main construction.

Comment [A5]: In everyday usage, it may seem natural to talk about a vector of features as a featured vector, but the standard term in the field is "feature vector."

A total~~ number~~ of ~~seven thousand~~7000 images were used to train and test the first stage of the~~for~~ age classification algorithm~~ training and testing on the first stage~~. Three~~3~~ ~~binary classifier~~BCs were created, each~~made~~ with~~utilizing~~ 144 adaptive features~~ each of~~.

The first-stage c~~C~~lassification results showed~~on the first stage are:~~ 82~~ ~~% accuracy for young faces~~age~~, 58~~ ~~% accuracy for middle-~~-~~aged faces, and 92~~ ~~% accuracy for elderly faces~~senior age~~. The overall a~~A~~ge classification accuracy for~~rate in~~ the~~a~~ three age categories was~~division problem –~~ 77.3~~ ~~%.

The second-stage BC~~Binary classifier~~s~~ of the second stage~~ were constructed in the same way as for~~equal to~~ the first stage (~~-~~described above). Fig. 11 shows a~~A~~ visual example of age estimation by the first stage of the proposed algorithm~~ on its first stage is presented in figs. 11~~.