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AGE GROUP CLASSIFICATION USING MACHINE LEARNING TECHNIQUES

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ABSTRACT

A human face provides a lot of information that allows another person to identify characteristics such as age, sex, etc. Therefore, the challenge is to develop an age group prediction system using the automatic learning method. The task of estimating the age group of the human from their frontal facial images is very captivating, but also challenging because of the pattern of personalized and non-linear aging that differs from one person to another. This paper examines the problem of predicting the age group of the human being based on presenting a facial image with improved accuracy of the estimate. The objective of this study is to construct a framework and later an algorithm that helps to estimate the age group with the reasonable accuracy of facial images. In this paper, we present a method for prediction by age group in which the age group is predicted by the detection of face or face reference points using the Viola - Jones algorithm. After detecting the face, features that include geometric characteristics, wrinkle characteristics and HOG characteristics are extracted, and then these extracted features are used to train a classifier using the neural network. The system used a self-construction database for the age group classification. Finally, the identification rate achieved by the HOG-Neural Network model produces better results.

I. INTRODUCTION

Classification of the age group of human beings can be identified by identifying characteristics such as gender, age, nose, eyes, wrinkles, etc. Which has attracted much attention in recent years, produces processing techniques of facial images as a comprehensive application in various graphical areas provides an important role in the field on the basis of the application of the classification vision research of human age, such as the human Computer Interaction (HCI), 2D and 3D face recognition and virtual reality [1] There is an assessment of the age of the person New ways is a lot and mainly focuses on the analysis of human facial image and these - Anthropometrics models are classified, aging and analysis of multiple regression. Anthropometric finds other ways in the form of sub-location of the pattern of aging of wrinkles and aging to be classified in different age groups; Retrograde has recently received attraction and provided good performance; Age groups can be considered as a problem of pattern recognition, in which two common steps are involved: Feature extraction and identity [2] With the extracted feature, the identification Can be easily done by the regression and classification process. Age classification is basically disturbed by training set, through which the system is trained and this test is set in which the examination is used for age grouping. Its main purpose is to develop an algorithm that recognizes the age of the person with the extracted characteristics. The system can be useful to stop young children from accessing adult content or content from the Internet and stop buying alcohol or cigarettes, etc. It offers a wide variety, such as multimedia content analysis, an interactive And to design our intelligent robot to achieve our goal, we need good databases in the form of FG-NET, so that these stopper The base can be used to train the classifier using the SVM or K NN and use the SVM classifier or the test set in K-NN is the main objective to solve our problem, so predict the age, so the front faces of the work face With regards. Now look at some approaches, such as the first image processing algorithm Viola Jones, support vector machine, K is the closest neighbor that has been used in the implementation of our proposed system. Among them, the face is the most natural and known biometrics. Age prediction refers to the use of a training set to train a model that can guess facial images. First of all, to check the predictions of age,

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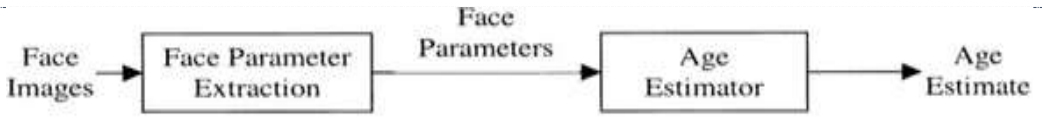

The two key phases is shown in the fig1.

Algorithm and technique used

- Viola Jones face detection algorithm
- Haar feature extraction using viola jones face co-ordinates.
- Morphological operation used to enhanced image quality
- KNN used to classification the selected features
- Artificial neural network used to selected feature

II. LITERATURE SURVEY

Rauli, Baluja and Kanade (1997) introduced the identity framework of a nervous system-based face. Similar to the comparative framework, which is forbidden to face the honest, front face, this frame identifies the face at any level of the revolution in the photo plane (Omima, 2014). In 1993, our motivation for a fuzzy logic-based pattern recognition framework emerged from the outline of an overview, such as elsewhere reported (Small jell, Johnson, 1993). In this application, the thickness of suspended particles in the liquid stream should be used to focus on the source of the molecule. In 2012, we used to direct an observational study that implements the BP nervous system model which recognizes suspicious wealth exchanges. There are distortions in the BP nervous system model which are more easily to fall in the surrounding model and it has moderate speed of the meeting. At that point, we had proposed a strategy to increase the flaws in the BP nervous system model. By optimizing the BP nervous system with genetic algorithm, we have the ability to discover better starting weight and threshold for the system. In 2015, we propose a novel picture annotation strategy that expects to coordinate with the infectious nervous system to reconcile various intensive nervous systems ideally. Specifically, the proposed system to examine the parameters of the intensive nervous system for each person's method and (ii) how to find the optimal mix of different settings. Proposal for analysis, due to classification of open datasets at the same time in a clear process Contrary to the most focused execution of the proposed plan and the other existing best in the class algorithm.

Procedures in 2015 in the wake of the deep neural network (DNS) to attack the single-channel multi-tear speech recognition issue. Our proposed methodology includes five key features: a multi-style preparation process, a separate DNN, a weighted finite state transducer (WFST) on the information of a mixed lecture - some of the strong and amusing speakers on two basis To evaluate the possibilities, the talker decoder is mutually related to gauge and speaker and discourse, which The speaker is changing the sentence, which varies from the example of vitality mixed lecture, and a determination based framework mixing technique. While examining the test speech of the 2006 Disclosure Division and the Acceptance Test, an important voice for the interruption of an anti-speaker in our proposed DN-based framework. The best establishment in these proposed frameworks meets a general word fault rate (WEER) of 18.8% crossword on a variety of SNRs and beats 2.8% of the top holder's IBM Supermon framework with fewer assumptions.

Problem Statement

The problem of age classification from facial images is very captivating, but also demanding because the age of the human varies according to the different factors that may be internal or external factors. Internal factors vary by age, including gender, genetics, etc., while external factors influencing age include lifestyle, drugs, ethnicity, etc., and both factors could complicate the formulation of human growth. The process of estimating the aging of the face that has been developed has achieved a high accuracy rate for the faces of the baby, but for adults, this process has been a complicated task due to the appearance of different types of aging, internal factors, skin texture and external factors for a few years. It should also be mentioned that age group prediction has been useful in different systems, such as demographic classification, computer-computer interaction (ASHCI) and indexing of image datasets, and so on. In the automatic classification of ages, the main objective is to develop an algorithm that allows to classify the age group according to the characteristics of the facial images extracted. One of the main challenges of the age classification is the level of precision, which is due to the complexity of the human aging model. Therefore, it is not only appropriate to classify human age, but it is also essential to predict it as accurately as possible. Another important aspect of the problem of age prediction is the range of age groups and this parameter is a key aspect since the different characteristics of the aging model appear in

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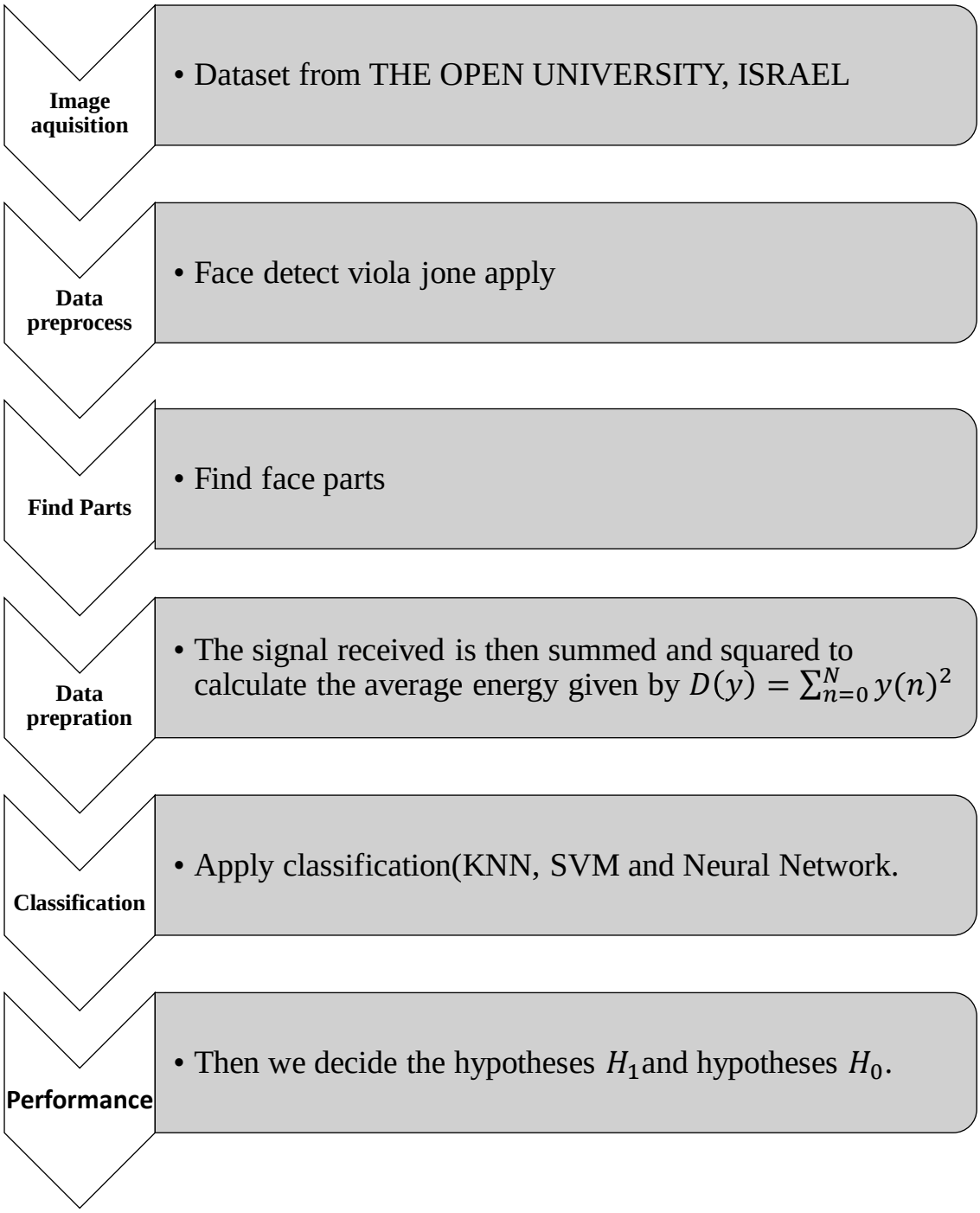
different age groups, therefore the system is trained to deal with specific grades. relevant for a more diverse range of age groups. Therefore, in this study, we find the task of predicting the age groups of the young, adults, and the elderly to an acceptable degree of precision of the facial image-based classification.

III. PROPOSED METHOD

Flow Chart Of Age Classification

The brief description of each block is described below:



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Because of the difficulty of estimating the exact age, the proposed system is implemented to classify age into certain ranges. The facial area is extracted from a real image. To train and test our system, we used the datasets organized in FG-NET. The proposed system mainly uses supervised neural networks with inverse propagation algorithm. the image is entered into the system, the entities are extracted, the image is classified in one of the four main age classes.

A. Pre-treatment

The first step of preprocessing is extraction. Extracting the face region means that the image is extracted from the input image captured with the crop tool. The input color image is converted to a gray image and stored in the database for processing. The region of the cropped face and the gray image converted.

B. Feature Extraction (HOG) & Wrinkle Analysis

The next step is to extract the features of the hand gesture. This system uses the HoG descriptor (Histogram oriented gradient) to present the hand shape. HoG descriptor counts the number of times a gradient orientation occurs in a localized are of the image. It uses a histogram of intensity gradient to depict the shape of the object. This technique is resilient under change of shadow and illumination. Due to this, it's a popular method for hand gesture detection. The implementation method of the HoG algorithm descriptor is given as follows. Firstly, the cells are divided into smallest possible regions of an image. These regions are called cells**.** For each of these cells, a histogram of of gradient orientations or edge orientations is computed. Each cell is separated and discrete into corresponding angular bins in accordance with its gradient orientation. The weighted gradient of each cell is contributed to its respective angular bin. The adjacent cell with same gradient orientation is grouped together and these spatial regions are known as blocks**.** These groupings into blocks are the basis for histograms' normalization. The normalized group represents the block histogram which in turn represents the descriptor [Dalal et al 2005].

C. Classification using neural network

Age classification using feature selection used best classification techniques (neural network) Our project result will be unique and further help for the researcher for the select best solution in the field of the pattern recognition. This typically pattern recognition project can be further used for predicting future faces prediction from facial images [92].

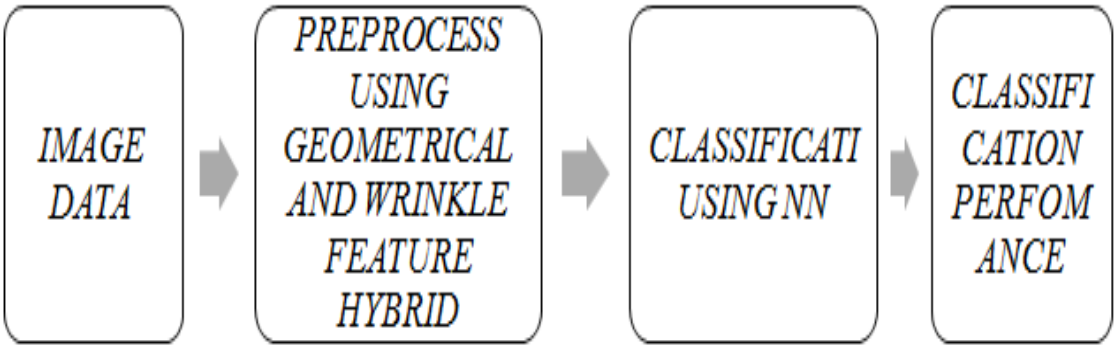

Figure 1. Block diagram of proposed work

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IV. RESULTS AND PERFORMANCE EVALUATION

Results

Fig. 5.2 Open test folder

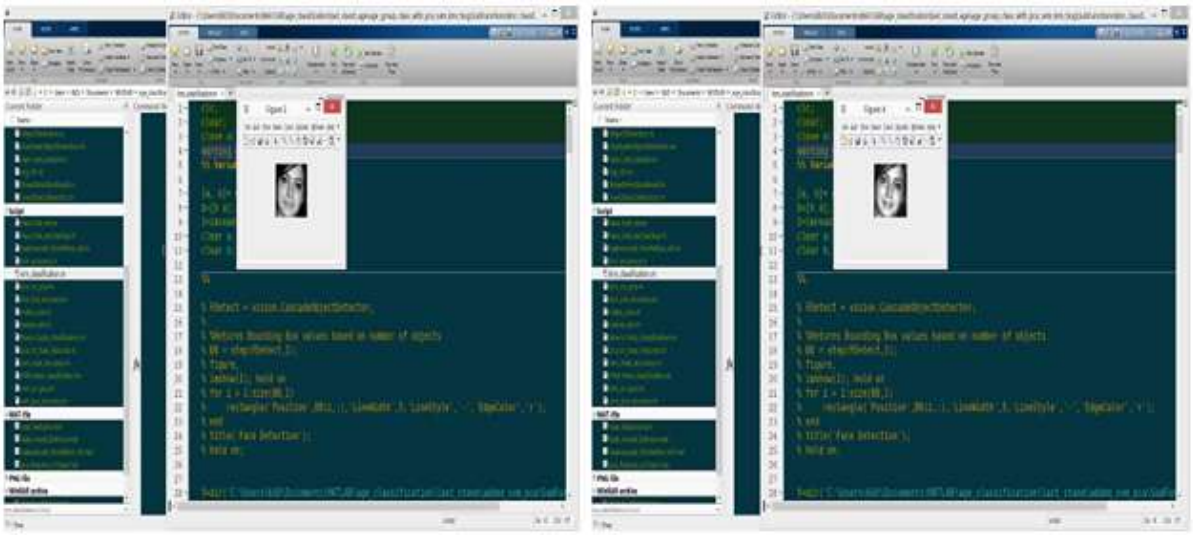

Fig 5.4 Gray scale conversation

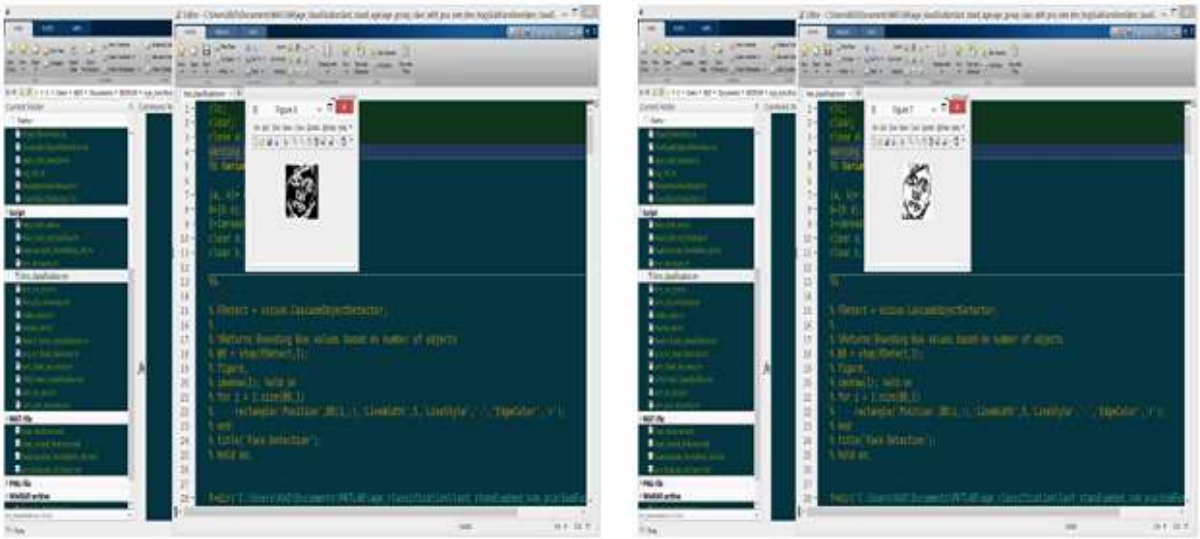

Fig. 5.6 Edge find

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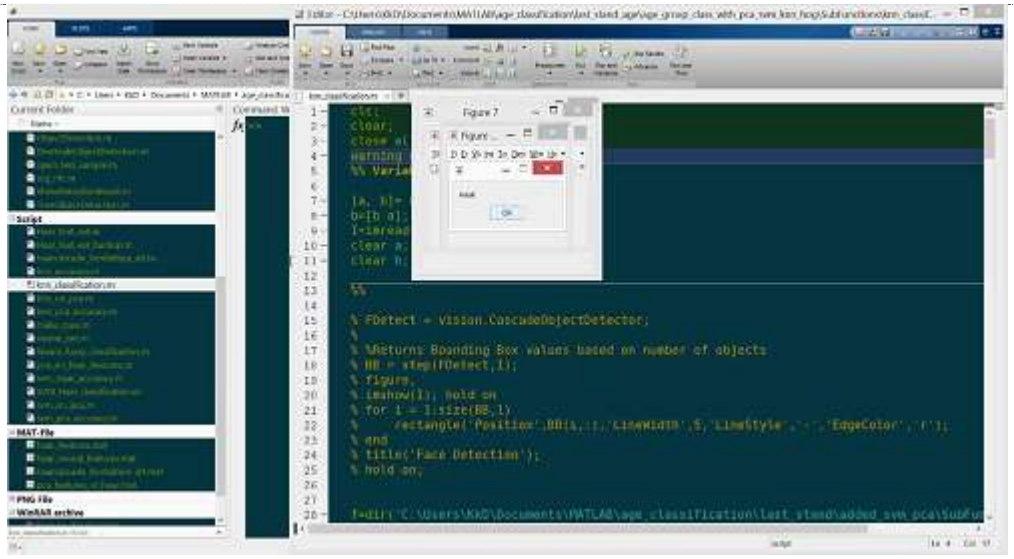

Fig. 5.7 Output for adult

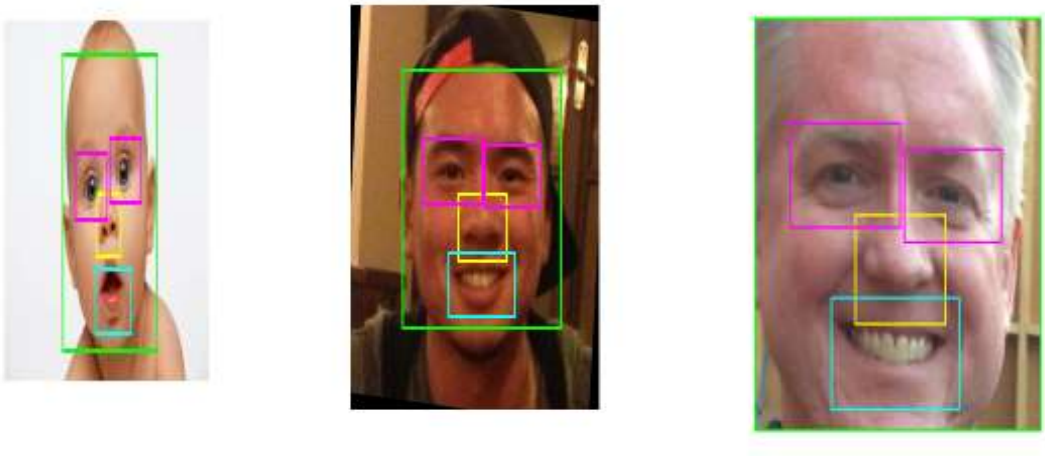

Fig 5.10 Child, Adult and senior face features detection (Face detection, Nose detection, Mouth detection and eye pair detection)

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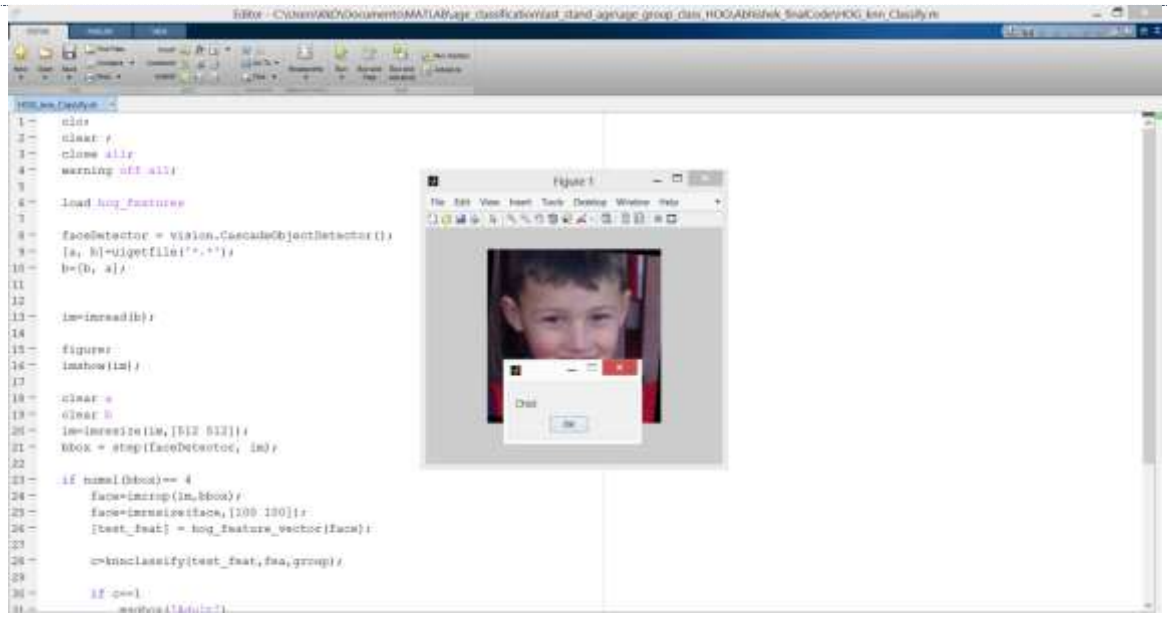

V. CONCLUSION

In this article, a new method for estimating age groups is described in detail. Thus, the technique proposed by HOG provides a robust method that verifies the age group of individuals from a set of different aged face images. The crucial extracted features such as the distances between the different parts of the face, the analysis of the geography of the wrinkles and the calculated calculation of the angle of the face are calculated. All of these ways are finally compared to find the best way to calculate the age ranges of face images in the database. After observing the results of all the features mentioned above, the face images are in 3 groups that are classified using Neural Network. The image should contain only one human face, as we work on the identification of the individual age group. This thesis works with an accuracy of 94% for two ages. Thus, there seems to be a definite possibility of a new extension of the work which includes the extraction of more characteristic points which can improve the precision of the classification of the age groups. By introducing more features, the age range can be reduced

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