Development & Implementation of Algorithms For Facial Recognition System

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***Abstract*—** In this phase we are discussing about algorithm, flow chart which is used to solve problem of human gesture recognition. There is a Train Database, from which we will find out equivalent image using principal component analysis

I. INTRODUCTION

Now we will execute development & implementation of algorithms for facial recognition system

IN THIS PHASE WE ARE DISCUSSING ABOUT ALGORITHM, FLOW CHART WHICH IS USED TO SOLVE PROBLEM OF HUMAN GESTURE RECOGNITION. THERE IS A TRAIN DATABASE, FROM WHICH WE WILL FIND OUT EQUIVALENT IMAGE USING PRINCIPAL COMPONENT ANALYSIS. ALGORITHM: -

1. TAKE THE IMAGES OF TRAIN DATABASE
   A) READ THE PIXEL VALUE OF IMAGES
   B) RESHAPING 2D IMAGES INTO 1D IMAGE VECTORS
   C) COMPUTING THE AVERAGE FACE IMAGE M = (1/P)*SUM (TJ'S)
   D) COMPUTING THE DIFFERENCE IMAGE FOR EACH IMAGE IN THE TRAINING SET AI = TI – M
   E) CALCULATE EIGENVALUES AND EIGEN VECTORS
   F) CALCULATE EIGENFACES
   G) PROJECTION OF CENTERED IMAGES INTO FACESPACE

2. READ THE TEST IMAGE FROM DATABASE OR FROM LIVE VIDEO
   A) EXTRACTING THE PCA FEATURES FROM TEST IMAGE, FIRST WE CONVERT IMAGE INTO COLUMN VECTOR, AND THEN SUBTRACT MEAN FROM IT.
   B) AFTER CALCULATING MEAN, FIND OUT PROJECTED IMAGE OF TEST IMAGE USING EIGENFACE

3. CALCULATE EUCLIDEAN DISTANCES BETWEEN THE PROJECTED TEST IMAGE AND THE PROJECTION OF ALL CENTERED TRAINING IMAGES.

4. SELECT THAT IMAGE FROM TRAIN IMAGE WHICH HAS MINIMUM EUCLIDEAN DISTANCE TO TEST IMAGE.

5.DISPLAY RECOGNIZED IMAGE.

We check for human gesture (happy, sad, surprise).Elapsed time also calculated in this code. Which show total time which is elapsed to find out equivalent image. In this we see that when we recognize first image then elapsed is more than other elapsed time which are calculated after. Because in first iteration code run all the steps for train database. In next iteration or when we give second test image then it will not execute all the steps for Train Database which has been executed.

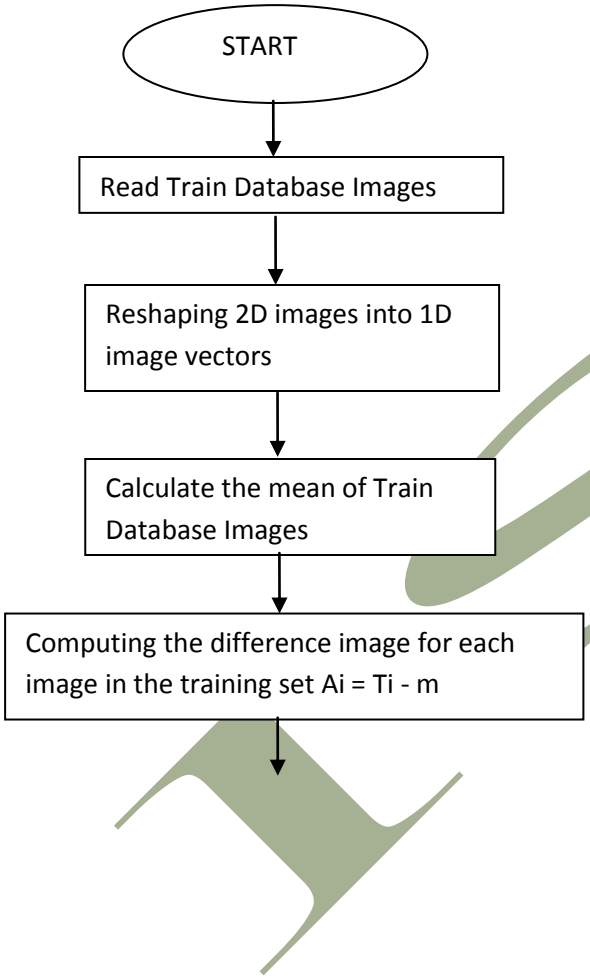
THE NUMBER OF BITS USED TO REPRESENT EACH PIXEL DETERMINES HOW MANY COLORS OR SHADES OF GRAY CAN BE DISPLAYED. FOR EXAMPLE, IN 8-BIT COLOR MODE, THE COLOR MONITOR USES 8 BITS FOR EACH PIXEL, MAKING IT POSSIBLE TO DISPLAY 2 TO THE 8TH POWER (256) DIFFERENT COLORS OR SHADES OF GRAY. THE RANGE OF 0-255 WAS AGREED FOR TWO GOOD REASONS:--

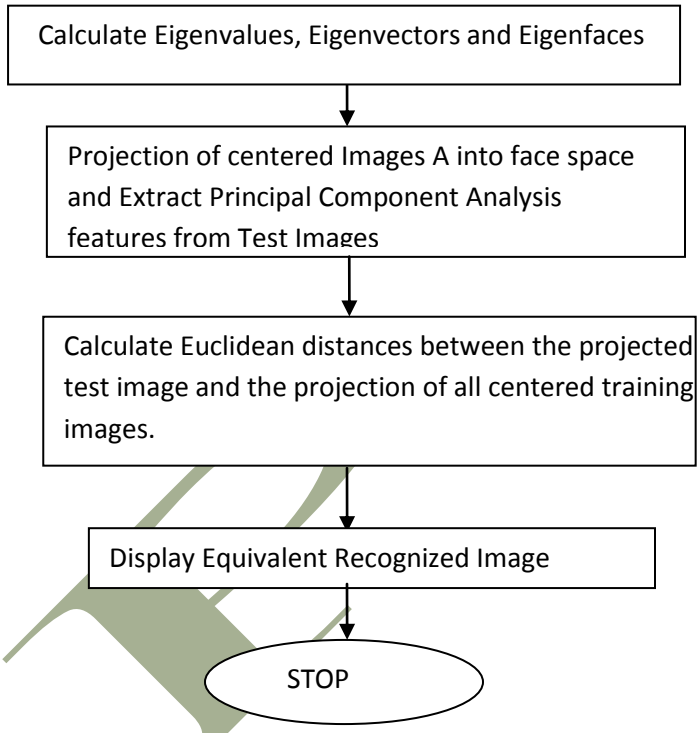
THE FIRST IS THAT THE HUMAN EYE ISN'T SENSIBLE ENOUGH TO MAKE THE DIFFERENCE BETWEEN MORE THAN 256 LEVELS OF INTENSITY (1/256 =0.39%) FOR A COLOR. THAT IS TO SAY, AN IMAGE PRESENTED TO A HUMAN OBSERVER WILL NOT

BE IMPROVED BY USING MORE THAN 256 LEVELS OF GRAY (256 SHADES OF GRAY BETWEEN BLACK AND WHITE).THEREFORE 256 SEEMS ENOUGH QUALITY.

THE SECOND REASON IS THAT, VALUE OF 255 IS CONVENIENT FOR COMPUTER STORAGE. IN TRUTH COMPUTER'S MEMORY UNIT BYTE CAN BE CODED UP TO 256 VALUES.

FLOW CHART:





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