

Error measurement and Face Recognition System using SOM neural network

Sudhir kumar¹, Davender singh²

¹ PG Student, Department Of Electronics and Communication Engineering

²Assistant Professor, Department Of Electronics and Communication Engineering
Manav Institute of Technology, Hisar, Haryana 125001, India

Abstract- Face Recognition plays very significant role in security. Basically it is a pattern recognition system that recognizes a person by determining the verification by using his different facial expression. In this paper use SOM neural network for the face detection for improving the accuracy. In this paper sketch images are taken as input images accordingly face is detected. By using SOM neural the accuracy of the system is increased to 99%. In this paper different Faces are recognized at sketches of images and face expressions.

Index Terms- SOM, Face detection, neural network

I. INTRODUCTION

Today, Face identification creates the final output of ample face-recognition system: the uniqueness of the given face image [6]. Based on standardized face image and facial feature positions plagiaristic from previous stages, a feature vector is generated from given face and compared with a database of known faces. If a close match is found, the algorithm returns the related identity [8]. A main problem in face identification is the large differences between face images from the same person as compared to those from different persons.

Face recognition includes comparing an image with a database of stored faces to identify different input image. The related task of face detection has direct significance to face recognition because images must be analyzed and faces recognized, before they can be recognized [2]. Detecting faces in an image can help to focus the computational resources of the face recognition system, enhancing the systems speed and performance.

II. RESULTS AND ANALYSIS

Face recognition is one of the biometric recognition technique. It plays very important role in the securities issues. For improve the security we improve the face recognition system using SOM neural network. In this paper two test are taken first is sketech image is taken as test image and original

image is detected and second test is original image is taken as test image and accordingly sketch is detected.

A. Training Data

For the face recognition using SOM neural network taken training data images for the recognition. Some training data images used for the face recognition. Below figure shows the training data:



Figure 1: Training Data

B. Testing Data

For the face recognition using SOM neural network taken training data images for the recognition. Some testing data images used for the face recognition. Below figure shows the testing data:



Figure 2: Testing Data

Test 1

We have given 1.jpg sketch of image from testing folder for detection and in result we got name of image matched by algorithm exists in Pics folder.

Apply input which is recognize: as sketch of image

Output of test 1

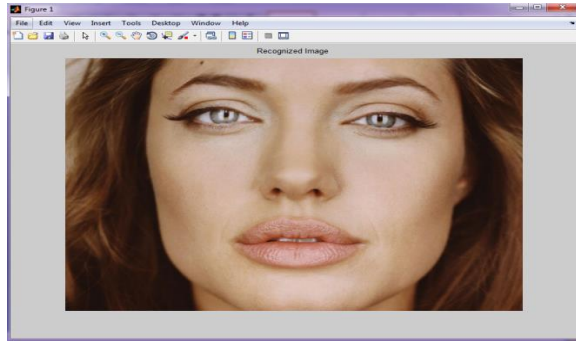


Figure 3: Result 1 recognized original image

Error in recognized image:

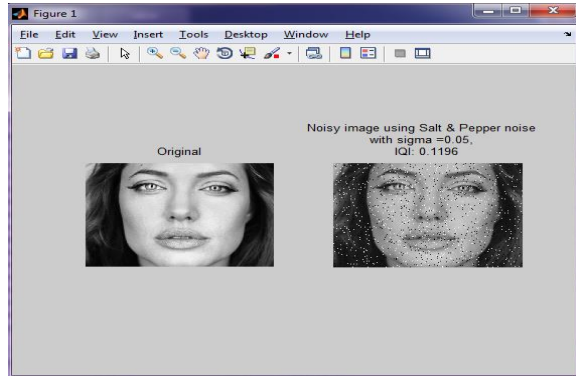


Figure 4: Error in recognize image

PSNR = +18.04908 dB
 MSE = 1027.00403
 RMSE = 32.04690

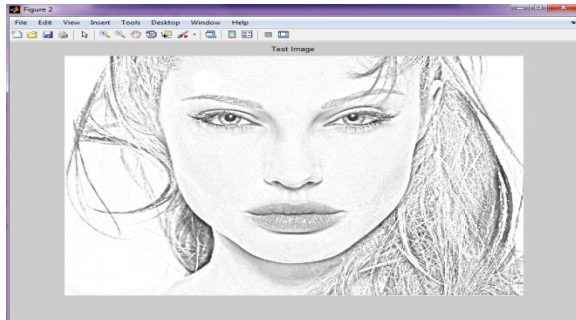


Figure 5: Result 1 testing sketch image

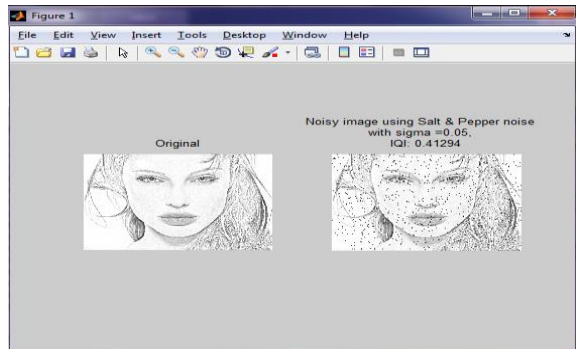


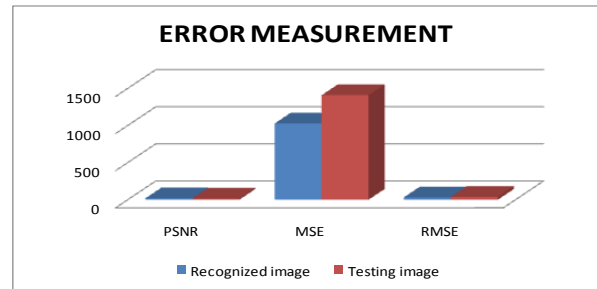
Figure 6: error in testing image

PSNR = +16.67634 dB
 MSE = 1408.79050
 RMSE = 37.53386

Result: Detected successfully

Table 1: Error measurement in test 1

Test 1	PSNR	MSE	RMSE
Recognized image	18.04908	1027.00403	32.04690
Testing image	16.67634	1408.79050	37.53386



Graph 1: Error measurement in test 1

Test 2



Figure 7: Result 2 test image

Error measurement in test 2

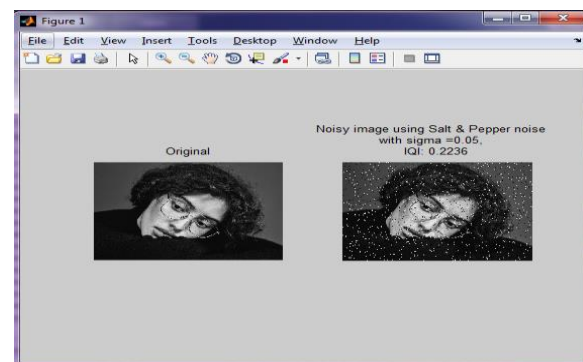


Figure 8: Error measurement testing image

PSNR = +17.39274 dB
 MSE = 1194.55515
 RMSE = 34.56234

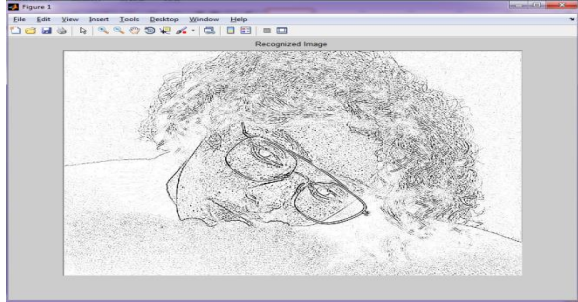


Figure 9: Result 2 recognized image

Error measurement in test image

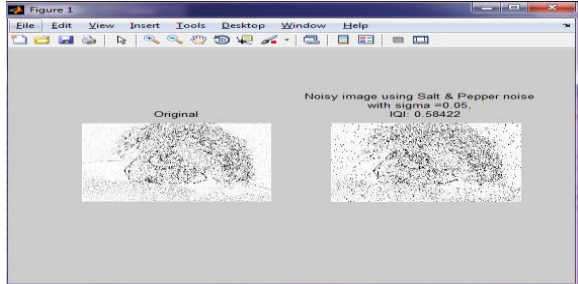


Figure 10: Error measurement recognized image

PSNR = +16.65569 dB

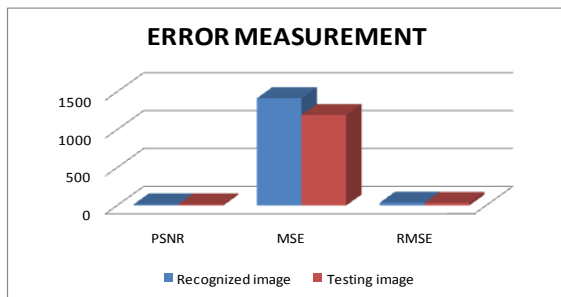
MSE = 1415.50286

RMSE = 37.62317

Result: Detected successfully

Table 2: Error measurement in test 2

Test 1	PSNR	MSE	RMSE
Recognized image	16.65569	1415.50286	37.62317
Testing image	17.39274	1194.55515	34.56234



Graph 2: Error measurement in test 2

Comparison with previous work:

For the face recognition here various tests are taken and these tests are taken as face detection of sketch using SOM neural network. The proposed algorithm gives 99% accuracy while testing. It give 99%

accurate result of face detection while previous work gives 92%accuracy.

III. CONCLUSIONS AND FUTURE SCOPE

This paper has presented a face recognition system using neural networks in the context of face verification and face recognition using photometric normalization for comparison. Proposed method gives the highest accuracy using the original face image. We gave different images from testing folder to detect face from training set and got accurate results. Thus, applying SOM technique with feature extraction on the face image gives better performance. In this paper two test are taken first is sketech image is taken as test image and original image is detected and second test is original image is taken as test image and accordingly sketch is detected. Existing Paper have 92.40% Accuracy for various Images while our experiment gave 99% detection for various Images. As it's a dynamic and unsupervised algorithm, results may varies for different Data sets.

IV. REFERENCES

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