IMAGE RECOGNITION USING RESTORATION TECHNIQUE

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***Abstract*---The proposed system works based on image recognition system using thermal image concept. Thermal images are improving the image quality in the dark surrounding it find the image infrared redaction and create image information based on the radiation. These images are created with help of infrared cameras, this information is recorded with various temperature. During the process image surroundings are recorded helps to improve the matching process. Image registration process done with help of image registration tool. Input images are segmented and create image signature. Finally, image model was generated it help for matching process. For any matching process image model is required for that this model created and stored. The proposed with done with help of image restoration algorithm, experiments verify that proposed work brings efficient result.**

***Index Terms*---Image restoration, Filters, Thermal image, Noise removal, Image recognition, Image processing.**

I. INTRODUCTION

Identification systems are used for authenticating and recognizing persons based on the individual and physical characteristic data. Any recognition model works with three basis property such as attribute, biographical and biometric. [1]. It is easy to identify the first two property ie attribute and biographical identifier. The property biometric depends on the individual and it vary to person to person based on the individual behavior [2, 3]. Individual property is not same in all time, it depends the situation and environmental surroundings for that is function not accurate always, it varies from time to time. This variation also done in sometimes based on physical component and surroundings. All above problems are over come when we use thermal mid waves because images are recorded with help of electronic scale of impression. [4]

A.Existing System

Existing system works on multi sensor system; this creates the burden to the user. It creates large image feature every small sub region samples are merged and create one large feature set, from this complex set extraction are difficult.

B. Disadvantages of existing system

- Difficulty in detecting facial disguises.
- Light variability leads to problem in matching.
- Creates a large feature set.
- User gets complex system.
- Image signature creation is difficult.

II. PROPOSED SYSTEM

Proposed system works based on developing a procedure for the input. Input image are captured using functional information are taken from mid wave infrared images by current an incorporated approach that consolidates exclusive algorithms at mine thermal imaging features, based on it brings the model. This model helps matching process. The whole process done with four important steps they are A. Image matriculation B. Image impression Generation C. Model creation and D. Image Toning. All the above process is preformed separate operations and functions based on image capturing system and image thermal model signature generation. [7].

A.Advantages

- High accuracy in matching process.
- Effective subject matching.
- The developed technique is simple and fast.

B. PROPOSED ARCHITECTURE

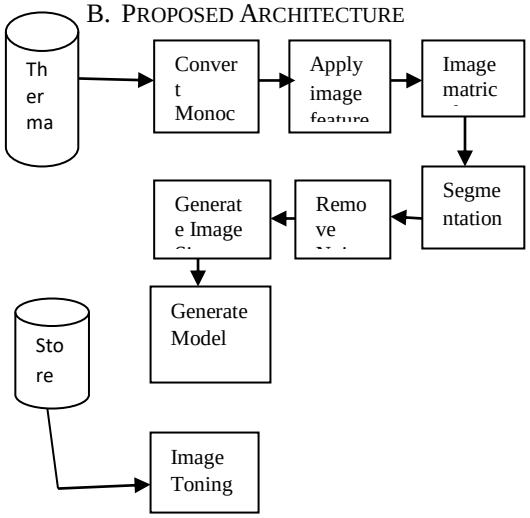

Fig. 1. Proposed image restoration technique

III. EXPERIMENTAL SETUP

A. Image matriculation Process

Technology brings usage of imagers everywhere, capturing and uploading images are easy task but retrieve the particular image are challenge to the user. Today most of the places like medical, agricultural, weather and for costing, military, education everywhere we can see the advantage of image processing. For this huge usage of image processing image matriculation process is difficult process o the user community. Technology brings various technique for image processing this paper uses one of the tool called image matriculation processing tool [8] [9] for image analysis and create image signature and image model for image matching process. Any image processing applications performs different images the same scene is taken as input for different view point and different angel of image capturing. With help of image processing technique the difference between the two images are calculated, that values are stored for future operation.

Process of image matriculation is shown in the fig 3.

B.Image impression Generation

There are four steps in the generation of thermal signatures. They are
a) Image Segmentation
b) Noise Removal
c) Image Morphology
d) Post Processing

a) *Image Segmentation*

The input image of the subject was segmented from the available image data set. This was achieved by implementing the technique of concentrate image based dynamic form. This technique normally segments the input images in restricted in order to handle the images in diverse setting [5, 6].

b) *Noise Removal*

After the input image was segmented, unwanted noise is removed in order to perform remaining task easily and efficiently [9.10,11]. Number of technique used for removing errors in the given image data sets. Here a regular dispersal filter is used it is first applied to the entire thermal image data set. Then the output of filtered thermal image data set further filtered with help of anisotropic transmission clean. This particular operation reduces the error in the given data set efficiently. Finally create the signature of the input mage set for further operations. [12].

c) *Image Morphology*

Image morphology is a way of analyzing images based on the model of the image. In this experiment, we consider the blood vessel is consider a pipeline arrangement in the overall size of the input image. Then experiments done with help of top hat segmentation technique this technique most effective because similar shapes only consider for further operation, partial shapes are eliminated avoid complex operation.

d) *Post Processing*

After image morphology image signature are successfully created for further operation the extent and connectivity of the original region. Morphological thinning is defined as a hit-or-miss transformation which is essentially a binary template matching. This process shown in the fig 4-6.

C. Image Model creation

In this module, four signatures are added and diffuse using Anisotropic Diffusion Filter. Creation of thermal signature model add all the outside thermal signature and finally added together [13]. Output of the creation is the combination of four thermal signature mining, functionally each of this image are slightly differ from others image. The goal is to keep the enhancement were present in all the images as the dominant features that otherwise define best the individual signature [14].

Proposed Algorithm

Step 1: Create input image database.
Step2: Read the I1, I2 and I3, I4 images.
Step3: Images are resized into 128X128 sizes.
Step4: Get the scales and orientation values
Step5: Depend upon orientation value get theta value
Step6:Find the Gaussian envelope.
Step7 : Repeat this step for all four selected input.
Step8: Generate a thermal image using step 7.
Step9: Output of Step 8, fused with selected input image.
Step10: Process repeats until get the Image template.
Step11: Stop

D. Image Toning.

Image processing done with help of image toning based on the user query image match with trained image in the data base. For this image resemblance is most important information, this helps to retrieve relevant image based in user search. Proposed system also works based in image matching technique. Users input thermal image are retrieved based on stored thermal image [15]. It is to be noted that the parallel measure defined in the study obeys the property of symmetry as long as the image with the desired features (h) is referred to as the reference window or reference image.

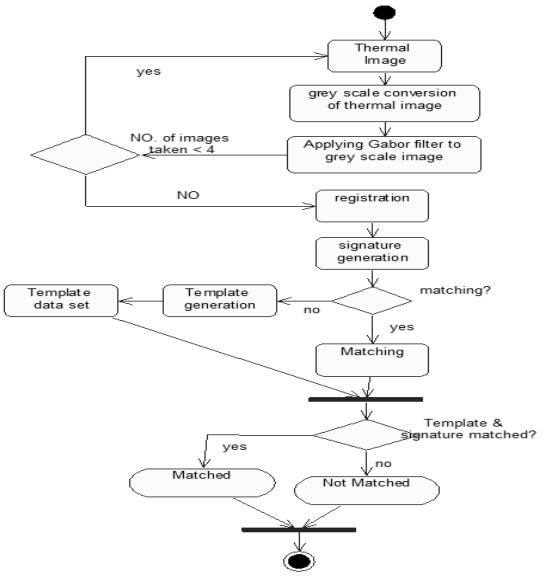

Fig. 2. Sequence diagram for image restoration process.

IV.EXPERIMENTAL OUTCOME

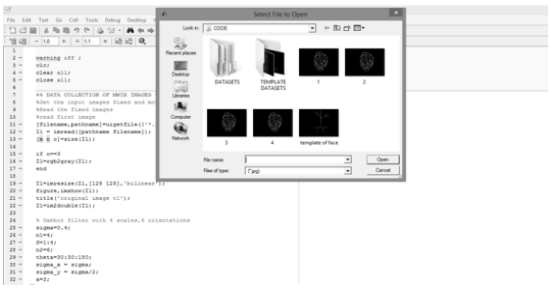

Fig. 3. Choose input image from stored database.

Fig. 4. Selected image coverted to Thermal image

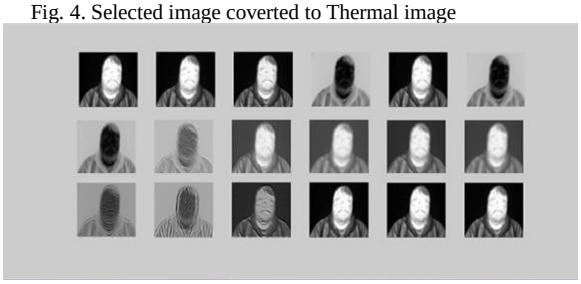

Fig. 5. Using filtering concept obtain four thermal image

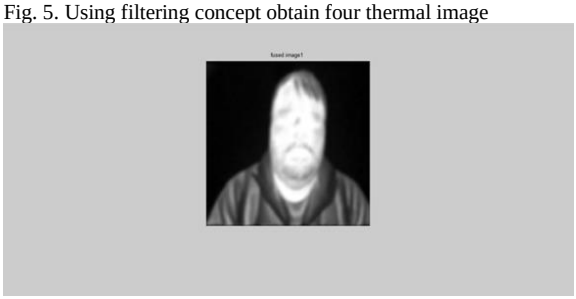

Fig. 6. output of merged image using fig

Fig. 7.Segmented image using contour, Mask generation

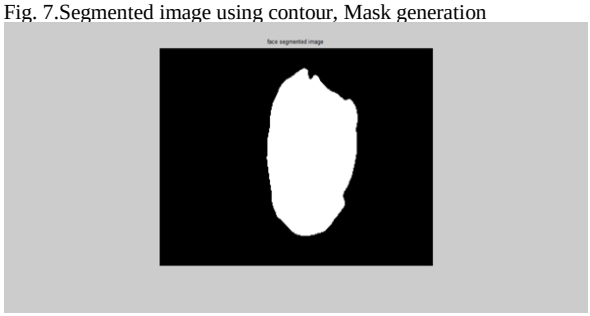

Fig. 8. Mask of registered image

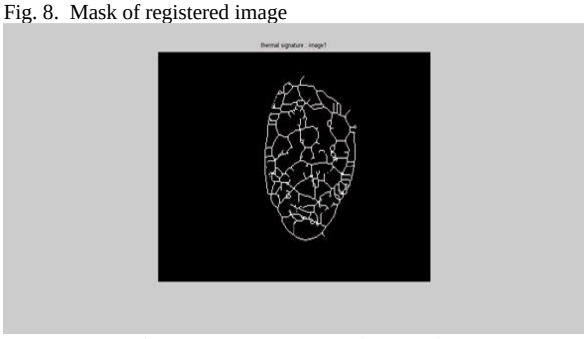

Fig. 9. Output of Thermal signature use of Mask of selected image

Fig. 10. Four thermal image signature combined image mask

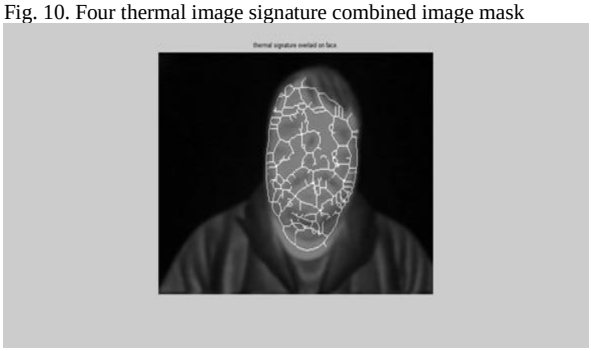

Fig. 11. Signature overlaid on input image

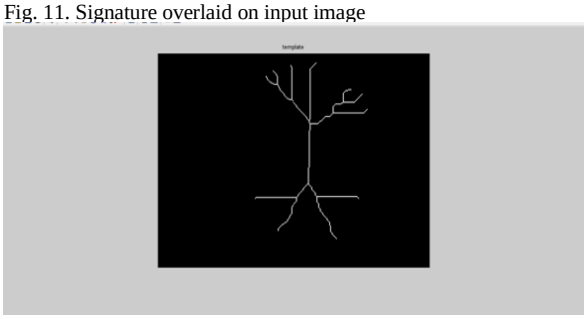

Fig. 12. Image template

V. CONCLUSION AND FUTURE ENHANCEMENT

This paper has presented a image reorganization using image restoring approach for biometric facial detection support on extracting consistent features from multiple input images. The approach used Registration tool for thermal image registration and localized-contouring algorithms to segment the subject's input image. A semantic image processing method used to mine the features from the input image it helps further to create image signature for image matching process using image comparison measure. This method is proves that it overcome the difficulty in detecting facial disguises and light variability problems.

A. Future enhancement

The image restoring approach works on thermal image can be employed in all recognition system to advances the accuracy in matching. Advanced techniques can be adopted in future to improve the performance of the system. The number of images used to register can be increased and registration techniques based on both attribute mining and sensor-based can be adopted to register the image with the system.

REFERENCES

[1] Adini Y., Moses Y. and Ullman S,, Face recognition: The problem of compensating for changes in illumination direction. IEEE Trans. Pattern Anal. Mach. Intell. 19(7): 721–732 (1997).

[2] Buddharaju P., Pavlidis I.T., Tsiamyrtzis P. and Bazakos M., Physiologybased face recognition in the thermal infrared spectrum. IEEE Trans. Pattern Anal. 29(4): 613–626 (2007).

[3] Chen X., Flynn P.J. and Bowyer K.W., Visible - light and infrared face recognition, Proc. ACM Workshop Multimodal User Authentication Pp. 48–55 (2003).

[4] Choi H.C. and Kim S.W., A direction-based vascular pattern extraction algorithm for hand

vascular pattern verification. Etri. J. 25: 101–108 (2003).

[5] D. Saravanan, Effective Multimedia content Reterival. International Journal of Applied Enivornmental Sciences 10(5): 1771-17783 (2015).

[6] D. Saravanan, Literature Survey on Web Based Knowledge Extraction. i-manager's Journal on Software Engineering, 10(2): 38-42 (2015).

[7] Javier Ruiz-del-Solar and Julio Quinteros, Illumination Compensation and Normalization in Eigen space-based Face Recognition: A comparative study of different pre-processing approaches. IEEE Trans. Biomed. Eng. 57(4): 979–987 (2010).

[8] Jenkinson M., Bannister P., Brady M. and Smith S., Improved optimization for the robust and accurate linear registration and motion correction of brain images. NeuroImage 17: 825–841 (2002).

[9] Khader M. and Ben Hamza A., Nonrigid image registration using an entropic similarity. IEEE Trans. Inf. Technol. Biomed. 15(5): 681–690 (2011).

[10] D. Saravanan and S. Srinivasan, Data mining framework for video data. Recent Advances in Space Technology Services and Climate Change (RSTSCC), Chennai, Pp. 167-170 (2010).

[11] D. Saravanan, Video Substance Extraction Using image Future Population based Techniques. ARPN Journal of Engg and Applied Science 11(11): 7041 -7045 (2016).

[12] D. Saravanan, Design and implementation of feature matching procedure for video frame retrieval. International journal of control theory and Applications 9(7): 3283-3293 (2016).

[13] Lin C.L and Fan K.C., Biometric verification using thermal images of palm-dorsa vein patterns. IEEE Trans. Circuits Syst. Video Technol. 14(2): 199–213 (2004).

[14] Miura N., Nagasaka A. and Miyatake T., Feature extraction of inger vein patterns based on repeated line tracking and its application to personal identification. Mach. Vision Appl. 15: 194–203 (2004).

[15] Pavlidis I., Tsiamyrtzis P., Buddhraju P. and Manohar C., Biometrics: Face recognition in thermal infrared In: Biomedical Engineering Hand book, J. Bronzino, Ed. Boca Raton, FL: CRC Press (2006).

[16] Prior F.W., Brunsden B., Hildebolt C., Nolan T. S., Pringle M., Vaishnavi S.N. and Larson-Prior L.J., Facial recognition from volume rendered magnetic resonance imaging data. IEEE Trans. Inf. Technol. Biomed. 13(1): 5–9 (2009).