ABSTRACT

Authentication is the process of identifying an authorized person. Nowadays passwords, electronic cards and personal identification numbers used for authentication. But it is not reliable for higher security areas and there are more possibilities for hacking.

To overcome these drawbacks, a new biometric authentication been developed such as iris recognition, face recognition, fingerprint recognition, nail recognition and multimodal recognition. To improve the recognition rate, a multimodal with fuzzy RCE strategy been introduced the combination of four methods such as face, fingerprint, iris and nail. Outcome of the system is fusion of these four techniques.

Face recognition is the challenging issue in authentication system. The new proposed face recognition method Multi-Swarm Optimization based DCT and DWT used for recognition. It will overcome the drawback of existing systems such as misalignment, pose variation and occultation problems. Multi-Swarm Optimization based method been used to extract the face features, to overcome. The proposed method solves the pose variations, illumination and noise problems in the images.

Segmentation based Fingerprint matching achieved by Global Variational Method. Minutiae is the important feature of the fingerprint. Fingerprint segmentation and recognition systems includes different stages such as pre-processing, extraction and matching of images. Global Variational method is used for matching the extracted features from the fingerprints. The Global Variational method decomposes the image into three

parts such as Texture, Cartoon and Noise images. Texture fingerprints segmented and matched. Cartoon and noise images ignored. The proposed system trained and tested using MSU_Veridicom database.

Hybrid fuzzy model used for iris recognition. CASIA-Iris Image Database (CASIA-Iris) used for training and testing. The randomness and uniqueness of human iris patterns were investigated by different pairs of eye images. Iris authentication includes various steps such as pre-processing, classification, segmentation and matching. The proposed hybrid method is a combination of Fuzzy K-Means and HMM model. This hybrid model used for segmentation and classification. Classified images used for recognition.

The new proposed Hybrid recognition method used for Nail recognition. Own Nail database created for this task. Database consists of 180 users with 720 Nail images. These images are used as an input image for authentication. Random noises in the images are removed by using median filters. Finger nail surface is extracted from the finger using ROI (Region of Interest).Feature points extracted by Haar Wavelet and Independent Compound Analysis. Multi-Orientation Gabor filter used for extracting the grown part of the nail plate from the finger. The recognition is mainly based on the shape and texture description.

Hybrid Fuzzy Reconstructed Columb Energy (HFRCE) method is used for combining all the modalities using feature level fusion. The proposed HFRCE method focuses on regression problems in fusion techniques and also provides a common solution to authentication for human recognition. In this approach, a new ensemble method called Machine Learner Fusion-Regression (MLF-R) proposed to increase the accuracy of the results through focusing on difficult samples. The architecture of MLF-R includes two different parts: the first is a training phase from which final nets

selected after a filtering process; the second part is a weighted decision maker including a back propagation structure which fuses the different nets derived from the first step to predict the outputs. The performance measure used to evaluate the False Acceptance Rate, False Rejection Rate and Equal Error Rate effectiveness divulges accuracy, which refers to the percentage of correct predictions made by the model.

As per the analysis of the multimodal biometrics, it is obvious that all the modalities fused in terms of improving the recognition rate and reduce the False Acceptance Rate, False Rejection Rate and Equal Error Rate.