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PERSONAL IRIS RECOGNITION USING NEURAL NETWORK

R. D. CHAUDHARI

Assistant Professor, Dept. of Electronics, Shri R. L. T. College of Science, Akola

Abstract: Iris recognition is one of important biometric recognition approach in a human identification is becoming very active topic in research and practical application. Iris. Region is the part between the pupil and the white sclera. This field is sometimes called iris texture. The iris texture provides many minute characteristics such as freckles, coronas, stripes, furrows, crypts, etc. These visible characteristics are unique for each subject. Such unique feature in the anatomical structure of the iris facilitates the differentiation among individuals. The human iris is not changeable and is stable. From one year of age until death, the patterns of the iris are relatively constant over a person's lifetime. Because of this uniqueness and stability iris recognition is a reliable human identification technique. Neural network based decision support system, is used for persons identification from IRIS recognition

Keywords: Sclera, Freckles, Coronos, Furrows

Corresponding Author: R. D. CHAUDHARI

Co Author: -

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INTRODUCTION

Today's E-Security are in critical need of finding accurate, Secure and cost effective alternatives to passwords and personal identification numbers as financial losses increase dramatically year over year from computer based fraud such as computer hacking and identity theft. Biometric solutions address these fundamental problems, because an individual Biometric data is unique and can not be transferred Biometric is automated methods of identifying a person or verifying the identity of a person based on physiological or behavioural characteristic.

For Example of physiological char. Include hand, finger image and facial characteristic and iris recognition behavioural char. Are trends which can be learn or acquired dynamic signature verification, speaker verification and key stroke dynamic are example of behavioural char. Biometrics system uses a hardware to capture the Biometric information and software to maintain and manage the system in general, the system translates these Biometric profile known as template that templates is stored in a data base the Biometric system then compares this templates to the new image created every time a user accesses system then compares this templates to the new image created every time a user accesses the system for an enterprise Biometric provides value into two ways Biometric adds a unique identification to network authentication, one that is extremely difficult to duplicate smart cards and token also provides a unique identifier but an Biometric has an advantage over these devices a user can not lose or forget his or her finger print, retina or voice the practical application for Biometric are diverse and expanding and range from healthcare to govt, financial services, transportation and public safety and justice. Such application are on line identification for E-commerce access control of a certain building or restricted area, offline personal identification, financial automated teller machine (ATM), online ticket purchase etc.

Using iris recognition in ATM, a customer simply walks upto the ATM and look in a sensor camera to access their accounts the camera instantly photographs the iris of the customer if the customer iris data matches the record stored a data base access is granted. At the ATM a positive authentication can be read through glasses, contact lens and most sun glasses, iris recognition proves highly accurate, easy to used and virtually fraud proof means to verify the identity of the customer. Today with the development of Artificial Intelligence (AI) algorithms, iris recognition system may gain speed, hardware simplicity, accuracy and learning ability.

Problem Formulation :-

Neural network based decision support system, is used for persons identification from IRIS recognition.In this case the D.S.S. (DECISION SUPORT SYSTEM) will work as a classifier estimate non linear and complex decision boundaries between different classes. The neural network configuration to be used for this research work are as 1) Multilayer Perceptron (MLP) 2)   Radial based function network (RBF) 3)   Self Organizing map (SOM)

4)   Support Vector Machine. The various parameter of neural network will be varied carefully in order to obtained the optimal configuration in view of minimum mean square error and maximum classification accuracy and simplicity of neural network model, the available data set ratio of these partitions will varied gradually. For e.g. 70% training, 20% testing, 10% cross validation and various possible combination like permutation and combination like this will be form. The order of testing and training will be swapped for reverse tagging. The different data partitioning ensures that the trained neural network s not dependent on any specific data partition to produce the best results and the learning is almost independent of data is essential. In each of the neural network configuration. The variable parameters are as   Hidden layer, Number of neurons in each hidden layer, Transfer function of neurons output layer, Learning rule or training algorithm to be used such as standard back propagation algorithm, conjugate gradient algorithm, delta algorithm and quick propagation ,   Number of cluster Centers, Learning rate and value of step size and momentum. All possible Variable parameter of neural network will be varied systematically until the most optimal configuration is reached, where mean square error on the training, testing and cross-validation data set is the lowest regardless of data partitions and classification accuracy

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for cross validation and testing data set will approach 100% ideally. Finally an optimal neural network based D.S.S. will be designed in each category of neural network and then shall be overall comparison among different neural network configuration. In this case of decision support system confusion matrix and classify accuracy are important to Identify person iris image. In this case mean square error is not very important digestive parameter, it is only used to control and monitor learning algorithm and training of neural network, neural network is trained on the different data partition and it is tested on a separate data partition that was never presented to neural network, while training. This is done for proper generalization and true learning.

Conclusion:-

In this the iris preprocessing steps that includes iris localization, normalization and enhancement and then applied to the small singular program on Matlab. Software convert that images into the numerical data. Numerical data then applied to the Neural solution and then trained the Network and classify the images using multilayer perception (MLP), Radial based function Network (PDF) and the images and gives the accuracy of that images. In this work, Iris recognition system based on neural networks base decision support system is used for persons identification from iris images. Multilayer percceptron network is one of the best techniques to identify Iris images of a person.

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