**ABSTRACT**

In this thesis the design recognition system for retinal images using neural network is considered. Retina based recognition is perceived as the most secure method of identification of an identity. The retinal information is used to distinguishing individuals. The existing biometric techniques are described. The state of application of retina recognition is discussed. Biometry of retina, its basic elements and extraction of retina features are discussed. A processing method for extracting an invariant representation of such information from an image of retina is also discussed. The structure of recognition system of retinal images is presented. Preprocessing is applied to extract features from retinal images. Extracted features of retina are transformed to the input feature vector. This input vector is input for recognition module. Recognition is performed using neural network. Using learning algorithm the synthesis of recognition system is performed. The neural network is trained using retina patterns. Training of neural network based recognition system is performed using backpropagation algorithm. After training the neural system is applied for recognition. The structure of neural network used for retina recognition and its learning algorithm are described. The implementation of recognition system has been done using Matlab package. The thesis describes performance of retina based identification and discussion of obtained results.

Key words: neural network, biometry of retina, recognition, retina based identification.

**ACknowledgEment**

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