**ABSTRACT**

The theme: “Wavelet analysis application to fingerprint recognition”.

Bachelor thesis: 139 p., 11 tabl., 71 fig., 1 appendix, 28 references.

Object of research is human fingerprints and their features in context of identification of the human person.

Subject of research is fingerprint recognition methods which based on texture characteristics of image.

The goal of work is development and analysis of alternative for classic approach to fingerprint recognition, which would be able to process low quality images, and research of proposed algorithm modification based on various wavelet function families.

In this work review of existent approaches to fingerprint identification was performed. New algorithm for fingerprint identification was developed which based on source image decomposition through discrete wavelet transform. On the preprocessing phase contextual filtering is being use in order to increase quality of fingerprint ridges. Automatic fingerprint recognition system based on proposed algorithm was developed as the result of this work. According to experiments was found that the most effective identification results correspond to algorithm modification based on Haar wavelets, for which 86% recognition rate was achieved. In spite of the fact that classical algorithms allow to achieve higher recognition rate, the advantage of proposed algorithm is ability to work with low quality images.

Achieved results may be used for development of complex user authentication and authorization system, which could be used for access management in financial, health care, administrative and other areas.

FINGERPRINT, WAVELET, CONTEXTUAL FILTERING, BIOMETRICAL TECHNOLOGIES, ORIENTATION FIELD, FREQUENCY FIELD, FINGEPRINT IDENTIFICATION