

ABSTRACT

The thesis is presented in 51 pages. It contains 2 appendixes and bibliography of 19 references. 13 figures and 3 tables are given in the thesis.

The aim of this thesis is to enhance recognition of musical instruments in the sound file by developing mathematical models and software of a corresponding automated system.

The task of recognizing musical instruments in a sound file is divided into two stages, namely, finding the criteria, on which examples of instruments are formed, and the process of criteria classification for a given instrument.

In the thesis, existing methods and solutions to solve this problem are analyzed, which are based on audio files frequency processing and spectral analysis for finding criteria (including spectral processing with filtering, wavelet transform, mel-frequency cepstral coefficients) and methods used for classification of information (method based on dynamic time of transformation, neural networks).

The algorithm for recognizing a musical instrument based on mel-frequency cepstral coefficients is developed and implemented programmatically in the automated system. The system is experimentally tested..

Keywords: Fourier transform, spectral analysis, mel-frequency cepstral coefficients, neural network.