

REVIEWER'S REPORT

on Dissertation Thesis of Mekebayev Nurbapa Otanovich on the theme «Algorithms development and research for identification and features processing in speech recognition problems using machine learning», submitted for the Ph.D. degree in the specialty 6D060200 – Computer Science

In today's world, there is an increasing emphasis on interfaces that use voice input and output to communicate between the user and the computer. Therefore, developers of speech recognition systems that implement an acoustic interface have to take into account the increasing variability in voice messages. The task of speech recognition (in many ways: from the transcription of the spoken language to the verification and identification of the speaker) is currently very relevant.

Improvement of modern systems of speech recognition can greatly facilitate the relationship and interaction between man and computer. And the use of speech recognition systems is also very important in the work of law enforcement agencies. The relevance of the problems considered is due to the low level of the voice signals processed together with the noise in modern systems and the dependence of the results of the speaker, the problems of low operating speed systems.

In the course of dissertation preparation, the applicant investigated the development and research of algorithms of identification and processing of attributes in tasks of speech recognition with the application of machine learning. In the course of research work, the analysis of systems and methods of recognition and revealing of features of speech was made. Ways of creation of the speaker's acoustic enclosure are considered. The comparison of modern classification models and algorithms of speaker identification is carried out. The model and algorithm for determining gender differences were also developed.

On a theme of dissertation 22 scientific articles were published in the international journals referenced in the "Scopus" database as well as during the international conferences, in the magazines and bulletins.

As far as the shortcomings in the content and preparation of the dissertation – when comparing two neural models used to determine gender differences the author should have retested these models adding some noise to the signal. There are also some minor editorial and typesetting shortcomings not significantly affecting the value of the dissertation itself.

Doctoral student N.O. Mekebaev received a scientific internship at the Lublin University of Technology, Poland, in 2018. During the traineeship at the seminars, he made presentations, analyzing the relevant materials available in the international library base.

On the basis of the above mentioned, I consider that the dissertation of N.O.Mekebayev satisfies the requirements for obtaining the degree of Doctor of Philosophy (Ph.D.) in specialty 6D060200 – "Computer Science".

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Andrzej SMOLARZ