

The Report
of the Dissertation Council on Information and Telecommunication Technologies at Kazakh National Research Technical University named after K.I. Satbayev to awarding the degree of Doctor of Philosophy(PhD), doctor of profile in the next group of specialties: 6D070300 Information Systems (by industry), 8D06103 - Management Information Systems, 6D070400 Computer and Software Engineering, 8D06101 - Software Engineering, 8D06102 - Machine Learning & Data Science, 6D100200 Information Security Systems, 8D06105 - Information security systems, 6D071900 Radio engineering, electronics and telecommunications, 8D06201 - Telecommunications, 6D070200 Automation and control, 8D07101 - Automation and robotization for 2023

1. The number of hold meetings

The Dissertation Council has hold 9 (nine) meetings during the report period.

2. Names of council members who attended less than half of the meetings

- no

3. List of doctoral students with an indication of the organization

№	Full name of student	Name of University
1	Nazirova Assem Bakdauletovna	Kazakh National Research Technical University named after K.I. Satbayev
2	Koshkinbayev Sauletbek Zholdykarayevich	Kazakh National Research Technical University named after K.I. Satbayev
3	Utebayeva Dana Zholdybaykyzy	Kazakh National Research Technical University named after K.I. Satbayev
4	Seidaliyeva Ulzhalgas Omirtaevna	Kazakh National Research Technical University named after K.I. Satbayev
5	Albanbay Nurtay	Kazakh National Research Technical University named after K.I. Satbayev
6	Dosbayev Zhandos Makhsutuly	Kazakh National Research Technical University named after K.I. Satbayev
7	Mamadiyarov Maxat Muratovich	Kazakh National Research Technical University named after K.I. Satbayev
8	Toxanov Sapar Nurakhmetovich	D. Serikbayev East Kazakhstan technical university
9	Bekarystankyzy Akbayan	Kazakh National Research Technical University named after K.I. Satbayev

4. The brief analysis of dissertations that have been considering by the Council during the reporting year

The Dissertation Council considered 9 (nine) theses on 7 (seven) specialties and 2 (two) educational program in the reporting year. The names of dissertations by specialization are given below:

№	Full name	Thesis name	Code and name of the specialty
1	Nazirova Assem Bakdauletovna	Development of an information system for processing gravimetric monitoring data using global optimization methods (on the example of solving the gravity direct problem)	6D070400 Computer and Software Engineering
2	Koshkinbayev Sauletbek Zholdykarayevich	Research and modeling of the functionality of fiber-optic multifunctional sensors for monitoring technological processes	8D06201 – “Telecommunication s”
3	Utebayeva Dana Zholdybaykyzy	Research of effective UAV detection using acoustic data recognition	6D071900 – “Radio engineering, electronics and telecommunications”
4	Seidaliyeva Ulzhalgas Omirtaevna	Research of effective UAV detection using smart sensors	6D071900 – «Radio engineering, electronics and telecommunications»
5	Albanbay Nurtay	Research of characteristics of auto oscillatory processes and nonlinear effects in the models of neural systems	“6D071900 –Radio engineering, electronics and telecommunications”
6	Dosbayev Zhandos Makhsutuly	Research of audio-based emergency detection and classification	“6D071900 –Radio engineering, electronics and telecommunications”
7	Mamadiyarov Maxat Muratovich	Research and modeling of a high-frequency ozonator on a corona discharge	“6D071900 –Radio engineering, electronics and telecommunications”
8	Toxanov Sapar Nurakhmetovich	Information and educational portal of distance learning based on SMART technology	6D070300 – «Information systems» (by branches)
9	Bekarystankyzy Akbayan	Development of end-to-end system for automatic recognition of speech in agglutinative languages	8D06103 – “Management information systems”

4.1 Analysis of the topics of the considered theses

4.1.1 Analysis of the topics of the thesis of Nazirova Assem Bakdauletovna on the topic "Development of an information system for processing gravimetric monitoring data using global optimization methods (on the example of solving the gravity direct problem)" submitted for the degree of Doctor of Philosophy (PhD) in the specialty 6D070400 - Computer and Software Engineering.

The dissertation work of the doctoral student is devoted to the development of a new holistic web-oriented information system that allows gravimetric modeling of the state of the geological and geophysical environment of a hydrocarbon deposit using global optimization methods when solving a direct gravimetry problem. To construct density sections containing contours of disturbing bodies and density values, the thesis solves the inverse problem of gravimetry by solving a series of direct gravimetry problems.

The purpose of the work: to develop an information system for monitoring and modeling the ecological state of a hydrocarbon deposit. The IC will allow modeling the state of the geological and geophysical environment of the field by solving a direct gravimetry problem using global optimization methods for a number of simple mathematical models of the geological environment of the field within a given productive layer (depth range).

The scientific novelty of the dissertation work is that for the first time the method of simulated annealing and the genetic algorithm, which are probabilistic methods of global optimization, were used to solve the direct problem of gravimetry, the effectiveness of the methods used and the algorithms developed to solve the problem of gravimetry was evaluated.

4.1.2 Analysis of the topics of the thesis of Koshkinbayev Sauletbek Zholdykarayevich on the topic "Research and modeling of the functionality of fiber-optic multifunctional sensors for monitoring technological processes" submitted for the degree of Doctor of Philosophy (PhD) in the specialty 8D06201 - "Telecommunications".

The dissertation work of the doctoral student is to determine the high-speed shear of metal surfaces, temperature changes using optical Bragg gratings of an optical multifunctional sensor. For this purpose, the dissertation proposes to use optical sensors in an experimental installation of a pulsed magnetic field

The purpose of the work. The aim of the work is to determine the high-speed shear of metal surfaces, temperature changes using optical Bragg gratings of an optical multifunctional sensor. The change of metal surfaces depends on the applied deformation, temperature forces. This makes it possible to determine how deformed the devices used in the space industry are under the influence of external destabilizing factors, and to find the necessary materials and ways to protect against them.

Scientific novelty of the dissertation. For the first time in this paper, it is proposed to use optical sensors in an experimental installation of a pulsed magnetic field to detect high-speed shifts, temperature changes of metal surfaces. This method has not been used in other studies before and is a novelty of the work.

4.1.3 Analysis of the topics of the thesis of Utebayeva Dana Zholdybaykyzy on the topic "Research of effective UAV detection using acoustic data recognition" submitted for the degree of Doctor of Philosophy (PhD) in the specialty 6D071900 - Radio engineering, electronics and telecommunications.

The dissertation work of the doctoral student investigates the development of an Unmanned Aerial Vehicles (UAV) detection system based on the acoustic data recognition. The recognition of UAV acoustic signals was conducted using Melspectrogram frequency characteristics and studied using Gated Recurrent Neural Network based neural architecture.

The purpose of the work: The goal of this thesis is to investigate an efficient recognition method of UAV Acoustic Data.

The scientific novelty of the dissertation work is to development of an architecture of a UAV acoustic data recognition system with the integration of a modified Melspectrogram.

4.1.4 Analysis of the topics of the thesis of Seidaliyeva Ulzhalgas Omirtaevna on the topic «Research of effective UAV detection using smart sensors» submitted for the degree of Doctor of Philosophy (PhD) in the specialty 6D071900 – Radio engineering, electronics and telecommunications.

The dissertation work of a doctoral candidate is devoted to the research and development of a robust UAV detection system based on intelligent video sensors, which allows early detection of unauthorized penetration of UAVs into a protected area.

The purpose of the work: Research and development of a robust UAV detection system in real time using intelligent video signal sensors.

The scientific novelty of the research lies in the development of a real-time and accurate UAV detection system using digital image processing and a light neural network model, as well as to develop and study the algorithm of voting method for multi-angle drone detection task.

4.1.5 Analysis of the topics of the thesis of Albanbay Nurtay on the topic "Research of characteristics of auto oscillatory processes and nonlinear effects in the models of neural systems" submitted for the degree of Doctor of Philosophy (PhD) in the specialty "6D071900 – Radio engineering, electronics and telecommunications".

The dissertation work of a doctoral student is devoted to the consideration of nonlinear effects in dynamic systems that model the interaction of cells of the cerebral cortex (neurons); the conclusions following from the qualitative analysis of the equations of neuronal dynamics are supplemented in it by the results of numerical integration and compared with the characteristics obtained in the course of direct experimental measurements in analog electronic circuits simulating neurons.

4.1.6 Analysis of the topics of the thesis of Dosbayev Zhandos Makhsutuly on the topic «Research of audio-based emergency detection and classification»

submitted for the degree of Doctor of Philosophy (PhD) in the specialty 6D071900 – Radio engineering, electronics and telecommunications.

The dissertation work of the doctoral student is devoted to the research and development of methods for constructing an emergency detection system with high accuracy in public places based on audio signals received from acoustic sensors.

The purpose of the work. Research and development of a system for detecting social emergencies in real time based on audio signals.

Scientific novelty of the research. The scientific novelty of the research lies in the research and development of a real-time emergency detection system using audio signal processing methods and deep learning methods.

4.1.7 Analysis of the topics of the thesis of Mamadiyarov Maxat Muratovich for the degree of Doctor of Philosophy (PhD) in the specialty 6D071900 – "Radio Engineering, Electronics and telecommunications", doctoral student Mamadiyarov Maksat Muratovich analysis of the topic of doctoral dissertation work on the topic "research and modeling of a Crown discharge-based high-frequency ozonator installation

The purpose of the dissertation. The crown operating at the upper frequency is to increase the energy and economic efficiency of the ozonator based on discharge.

Scientific novelty of the dissertation. The corona is close to the upper voltage electrode based on the discharge and the values of Joule energy losses are calculated and the operating modes of the ozonator are determined.

4.1.8 Analysis of the topic of the doctoral dissertation by Sapar Nurakhmetovich Toxanov for the degree of Doctor of Philosophy (PhD) in the field of 6D070300 – Information Systems (by branches) on the topic of "Information and Educational Portal for Distance Learning Based on Smart Technology."

The purpose of the dissertation is the development of models and methods for integrating individual components of information technologies to create a flexible comprehensive information-educational environment on a unified system basis, using Smart technologies. This environment is aimed at improving the quality and efficiency of the educational process within the framework of the credit-module system of organizing the educational process in the distance education system and enhancing the effectiveness of the education system in the Republic of Kazakhstan.

The scientific novelty of the dissertation lies in the further development of the architectural and software solution for an information-educational portal for distance learning with the construction of an individual student learning trajectory based on Smart technology.

4.1.9 Analysis of the topic of the doctoral dissertation by Bekarystankyzy Akbayan for the degree of Doctor of Philosophy (PhD) in the field of 8D06103 – Management information systems on the topic of "Development of end-to-end system for automatic recognition of speech in agglutinative languages".

The purpose of the dissertation. The present dissertation was developed with the aim of studying the ways of improving ASR performance for agglutinative languages on the example languages from Turkic family.

The scientific novelty of the dissertation. The thesis proposes scientific and practical novelties, which were applied to practical tasks, especially for improving end-to-end automatic speech recognition systems for agglutinative language - focusing Kazakh language and which can easily be applied to other languages. Moreover, contributions were made to the increase of training data size for Kazakh language. The main positive results, obtained during the research are listed below:

- 1) Was developed data corpus for agglutinative languages.
- 2) Were developed effective models for recognition of low-resource agglutinative languages from Turkic family: transfer, multilingual, extended language model.
- 3) System for automatic speech recognition for agglutinative languages.

4.2 Connection of the topics of dissertations with the directions of development of science, which are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs.

4.2.1 The dissertation work of **Nazirova Assem Bakdauletovna** was conducted in the frame of the project of the CS MES RK No. AP05135158 on the topic "Development of a geoinformation system for solving the problem of gravimetric monitoring of the earth's crust of oil and gas bearing regions of Kazakhstan on the basis of high-performance computations under conditions of limited experimental data" (2018-2020). The dissertation work corresponds to the priority direction of the development of science in the Republic of Kazakhstan: 4) information, communication and space technologies.

4.2.2 The dissertation work of **Koshkinbayev Sauletbek Zholdykarayevich** was carried out as part of the research work AP08052850 on the topic "Development of designs and manufacturing technologies for small-sized fiber-optic combined pressure and temperature sensors for space infrastructure", funded by the Ministry of Education and Science of the Republic of Kazakhstan. 4) information, communication and space technologies.

4.2.3 The dissertation work of **Utebayeva Dana Zholdybaykyzy** was carried out as part of the research work AP14971907 on the topic "Күдікті ұшқышсыз ұшу аппараттарын анықтаудың жиілікке негізделген сенімді жүйесін SDR және акустикалық белгілерді пайдалану көмегімен әзірлеу", funded by the Ministry of Education and Science of the Republic of Kazakhstan: 9) "National security and defense".

4.2.4 The dissertation work of **Seidaliyeva Ulzhalgas Omirtaevna** was carried out within the framework of the project on grant financing of scientific research of young postdoctoral scientists within the framework of the project "Zhas Galym" for 2022-2024 AP14971031 on the topic «Research and implementation of a bimodal system for real-time detection of unmanned aerial vehicles». The dissertation work corresponds to the priority directions of the development of

science of the Republic of Kazakhstan: 4) information, communication and space technologies and 10) National security and defense.

4.2.5 The dissertation work of **Albanbay Nurtay** corresponds to the tasks of the State Program "Digital Kazakhstan", approved by the Decree of the Government of the Republic of Kazakhstan dated December 12, 2017 No. 827. The dissertation work corresponds to the priority direction of the development of science in the Republic of Kazakhstan: 4) information, communication and space technologies.

4.2.6 The dissertation work of **Dosbayev Zhandos Makhsutuly** was carried out within the framework of the project on grant financing of scientific research of young postdoctoral scientists within the framework of the project "Zhas Galym" for 2022-2024 AP14971555 on the topic "Design and implementation Real-Time safety ensuring system in the indoor environment by applying machine learning techniques". The dissertation work corresponds to the priority directions of the development of science of the Republic of Kazakhstan: 4) information, communication and space technologies and 10) National security and defense.

4.2.7 The dissertation work of **Mamadiyarov Maxat Muratovich** corresponds to the state program of the Decree of the President of the Republic of Kazakhstan on the state program "Drinking Water", approved by the Decree of the Government of the Republic of Kazakhstan No. 367 dated March 7, 2015. Dissertation work on the creation of high-tech industries for the production of tools for water supply. Corresponds to the points of strengthening the role of research and design and survey institutes and the educational base.

4.2.9 The dissertation work of **Bekarystankyzy Akbayan** was performed under the research topic were conducted within the grant projects: "Development of an end-to-end automatic speech recognition system for agglutinative languages" (2020-2022, governmental registration number: 0120PK00344) in the Institute of information and computational technologies SC MHES RK.

4.3 Analysis of the level of implementation of the results of dissertations in practice.

4.3.1 The practical significance of the work of **Nazirova Assem Bakdauletovna** lies in automating the preprocessing of primary (raw) data from field studies of gravitational field variations; developing a method for solving a series of direct gravimetry problems using global optimization methods (simulated annealing and genetic algorithm) for three models of the geological environment (homogeneous sphere, horizontal prism, vertical ledge) by minimizing the discrepancy of force variations gravity; development of the GeoM information system for processing gravimetric monitoring data using global optimization methods. production of various devices with support for voice functions.

The practical significance of the work is also confirmed by the act of implementation in Nomad Geo Service LLP.

4.3.2 The practical significance of the dissertation work of **Koshkinbayev Sauletbek Zholdykarayevich** lies in determining the change in the rate of deformation of metal surfaces using optical Bragg grids of an optical sensor. When

high-speed deformation is detected, the use of an optical Bragg grating in a pulsed magnetic field device is envisaged. There are currently few studies of methods that register these changes due to the high strain rate. Most methods are limited to detecting deformations that occur within milliseconds. The novelty of this work is the detection of high-speed deformations occurring within a microsecond by testing and applying optical methods on a pulsed magnetic field device. The minimum time of pulsed current exposure to metal samples of the pulsed magnetic field device used in the work is 2 μ s.

The practical significance of the work is confirmed by the act of implementation of Kazteleradio JSC.

4.3.3 The practical significance of the work of Utebayeva Dana Zholdybaykyzy is to investigate the types of recurrent neural networks for the recognition of UAV acoustic data. The proposed system is recommended for national security systems, in particular the security of people, densely populated areas, airports, government buildings, kindergartens, schools, universities, national borders, customs, and strategic places.

4.3.4 The practical significance of the work of Seidaliyeva Ulzhalgas Omirtaevna in the direction of UAV recognition in real time by combining intelligent sensors will be used by the researcher in the scientific research project "Zhas Galym" in the priority direction "National Security and Defense" AP14971031 «Research and implementation of a bimodal system for real-time detection of unmanned aerial vehicles». That is, it will become the basis for the development of a bimodal system combining camera and LiDAR sensors to detect unauthorized UAV penetration in real time. As well as, the results obtained as a result of research work can serve to prepare a theoretical and practical base for training specialists in the fields of artificial intelligence and information technology, including machine learning, Computer vision, Image processing and Image recognition.

4.3.5 The practical significance of the work of Albanbay Nurtay. The study of signal processing modes using a neural system, as well as the dependence on its own indicators and external noise, allows us to determine the main methods for controlling the dynamics of the entire system. The results obtained can be applied in the creation of new radio-electronic and telecommunication devices, in which the ability to generate and process complex signals can play a significant role by studying the characteristics of self-oscillating processes and nonlinear phenomena in models of neural systems.

4.3.6 The practical significance of the dissertation work of Dosbayev Zhandos Makhsutuly. The proposed model of emergency detection in real time will be used as a future work of the researcher in the research project of the young scientist's project in the priority area "national security and defense" AP14971555 "Design and implementation Real-Time safety ensuring system in the indoor environment by applying machine learning techniques". The resulting model is used to identify social emergencies in public places with a high concentration of the population, such as airports, transport and railway stations, on the territories of schools and universities, shopping and entertainment and residential complexes. The

results obtained as a result of research work can also serve to prepare a theoretical and practical basis for training specialists in the field of artificial intelligence and information technology, including machine learning, audio data processing and sound recognition and classification. The obtained results were introduced into the educational process of the Almaty Academy of the Ministry of Internal Affairs of the Republic of Kazakhstan named after M. Esbolatov.

4.3.7 practical significance of Mamadiyarov Maxat Muratovich dissertation work mathematical laws of the evolution of corona discharge current around the corona electrode are established. At the same time, elements of the technology for creating Corona electrodes have been developed, which will allow creating a new design of ozonator installations. The presented design increases productivity by up to 20% percent at a certain time. In order to increase the energy and economic efficiency of the Etro - 03 ozonator installation based on high-frequency corona discharge, the design solution of the new device is protected by the copyright certificate of the Republic of Kazakhstan, that is, a patent of the Republic of Kazakhstan. The parameters of the pulse of the micro-discharge generated around the corona electrode are determined, for example: the maximum length of the micro-discharge, the development time, the maximum current and the theoretically calculated values are well consistent with the experimental data obtained in the dissertation.

4.3.8 The practical significance of the work of Toxanov Sapar Nurakhmetovich lies in the applicability of the proposed and developed solution for an information-educational portal for distance learning in any educational institutions. This solution enables effective student education by allowing the construction of individual learning trajectories based on Smart technologies, which significantly simplifies the task of using individual approaches for working with students by educators and automates the learning process itself. This, in turn, facilitates faster material mastery and increases the speed of learning.

The practical significance of the obtained theoretical results of the dissertation work is confirmed by the improvement in the efficiency of knowledge assessment in distance learning systems through the proposed information-educational portal for distance learning. This portal automates expert assessment of knowledge quality and individual learning trajectory construction. The developed information system is protected by a copyright certificate of the Republic of Kazakhstan.

4.3.9 The practical significance of the work of Bekarystankyzy Akbayan is next: it proves the possibility of improving ASR performance improving only the language model with external "Big Text", and shows the possibility of improving performance for all languages included in multilingual training for languages from one family group. The possibility of applying all mentioned theoretical statements to train ASR for agglutinative languages of Turkic family shows the practical significance of the current thesis. Moreover, text processing algorithms can be applied to wide range of text processing tasks. Audio-text pair data, collected during research, can be used in different speech processing tasks.

5. Analysis of the work of reviewers (with examples of the most low-quality reviews)

Reviewers of dissertations of doctoral students for the degree of Doctor of Philosophy (PhD), were appointed persons in accordance with the requirements of the Standard Regulations on the dissertation Council.

Information about the appointed reviewers is provided below:

№	Full name	Reviewers	
1	Nazirova Assem Bakdauletovna	Rysbayuly Bolatbek – Doctor of Physical and Mathematical Sciences, Professor, International Information Technology University	Bostanbekov Kairat Aratovich – PhD in specialty 6D070400 – Computer and Software Engineering, KMG Engineering LLP
2	Koshkinbayev Sauletbek Zholdykarayevich	Serikov Tansaule Gabdymanapovich-PhD, specialty 6D071900-Radio Engineering, Electronics and Telecommunications, Associate Professor of the Department of Radio Engineering, Electronics and Telecommunications of the Kazakh Agrotechnical University named after S. Seifullin.	Aitmagambetov Altai Zufarovich - Professor, specialty 6D071900 - Radio Engineering, Electronics and Telecommunications, Academician of International Communications, International University of Information Technologies.
3	Utebayeva Dana Zholdybaykyzy	Omarov Batyrkhan Sultanovich - doctor PhD, acting Associate Professor of the Department "Information Systems", KazNU named after Al-Farabi, Almaty, Kazakhstan.	Orazaliyeva Sandugash Kudaibergenovna - Doctor PhD, Associate Professor, Head of the Department "Electronics and Robotics", AUPET named after G. Daukeev, Almaty, Kazakhstan.
4	Seidaliyeva Ulzhalgas Omirtaevna	Chezhimbayeva Katipa Slambayevna – Candidate of Technical Sciences, Professor of the Department of Telecommunications and Innovative Technologies, AUPET named after G. Daukeev, Almaty, Kazakhstan.	Bostanbekov Kairat Aratovich – PhD in specialty 6D070400 - «Computer Engineering and Software», expert of KMG Engineering LLP, Astana, Kazakhstan.
5	Albanbay Nurtay	Chezhimbayeva Katipa Slambayevna – Candidate of Technical Sciences, Professor, Almaty University of Power Engineering and Telecommunications named after Gumarbek Daukeyev, Almaty, Kazakhstan.	Nalibaev Yerkebulan Dyuysenbekovich – Ph.D., Senior Lecturer, Al-Farabi Kazakh National University, Almaty, Kazakhstan.
6	Dosbayev Zhandos Makhsutuly	Altay Zufarovich Aitmagambetov – Candidate of Technical Sciences,	Mansurova Madina Yesimkhanovna - Candidate of Physical and Mathematical

		Academician of the International Academy of Telecommunications, Professor, International University of Information Technologies, Almaty, Kazakhstan.	Sciences, head of the department "Artificial intelligence and Big Data", Kazakh National University named after Al-Farabi, Almaty, Kazakhstan.
7	Mamadiyarov Maxat Muratovich	Kalandarov Palvan Iskandarovich Doctor of Technical Sciences, Professor. National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" Professor of the Department of Automation and Management of Technological Processes	Medetov Bekbolat Zhaksylykovich PhD, Senior Lecturer Kazakh Agrotechnical University named after S. Seifullin Department of "Radio Engineering, Electronics and Telecommunications"
8	Toxanov Sapar Nurakhmetovich	Barlybayev Alibek Baktybayevich PhD of L.N.Gumilev Eurasian national university	Mulesa Oxana Yuryevna Doctor of Technical Sciences, Associate Professor. Uzhhorod National University.
9	Bekarystankyzy Akbayan	Nurseitov Daniyar – Candidate of Technical Sciences, Professor, Expert at KMG Engineering, Astana, Kazakhstan.	Omarov Batyrkhan –PhD docent ICT Kazakh National University named after Al-Farabi, Almaty, Kazakhstan.

In order to ensure compliance with the requirements of the Standard Regulations on the work of the Dissertation Council, each reviewer was sent a memo with the requirements for the content and design of the review of the dissertation work.

All the reviews were submitted on time and in accordance with the requirements of the Committee for control in education and science of MSHE of RK.

There are no negative reviews.

6. Proposals for further improvement of the system of training of scientific personnel

to ensure high-quality consideration of works at the seminars of the department.

7. The number of dissertations for the degree of Doctor of Philosophy (PhD), doctor by profile in the context of areas of training:

1) dissertations accepted for defense (including doctoral students from other universities) – 9;

2) dissertations withdrawn from consideration (including doctoral students from other universities) - 0;

3) dissertations for which negative reviews were received from reviewers (including doctoral students from other universities) - 0;

4) dissertations with a negative decision based on the results of the defense (including doctoral students from other universities) - 0;

5) dissertations sent for revision (including doctoral students from other universities) - 0;

6) dissertations aimed at repeated defense (including doctoral students from other universities) - 0.

**Chairman of the
dissertation council
on information and
telecommunication
technologies,
doctor of tech. Sciences,
Professor**



R.K. Uskenbayeva

**Scientific Secretary of the
dissertation council
on information and
telecommunication
technologies,
Ph.D.**

Zh.B. Kalpeyeva