

**Report on the work of the dissertation council
Dissertation council at IJSC " KazNRTU them. K. I. Satpayeva»
by groups of specialties 6D071200-Mechanical Engineering and 6D071600-Instrument
Engineering.**

The report contains the following information:

1. Data on the number of meetings held.

Six meetings were held during the reporting period:

On May 20, 2022, a meeting of the dissertation permanent council was held on the selection and approval of the temporary dissertation composition for further evaluation of the research of the dissertation work of the doctoral student of the department of "RaAE" Issabekov Zhanibek Nazarbekuly on the topic "Motion control of a robot with a tree-like kinematic structure".

On May 25, 2022, a meeting of the dissertation council was held to accept documents, approve official reviewers on the dissertation work of doctoral student Issabekov Zhanibek Nazarbekuly and approve the date of defense of the dissertation work on the topic: "Motion control of a robot with a tree-like kinematic structure", submitted for the degree of Doctor of Philosophy PhD in the specialty 6D071600 - "Instrument engineering".

On June 29, 2022, meetings of the dissertation council for the defense of the dissertation work of Issabekov Zhanibek Nazarbekuly were held on the topic: "Motion control of a robot with a tree-like kinematic structure".

On November 10, 2022, a meeting of the dissertation permanent council for the reception of documents, for the selection and approval of the temporary dissertation composition for further evaluation of the research of the dissertation work of the doctoral student of the Department of "RTITS" Alimbayeva Zhadyra Nurdauletovna on the topic "Neuroline analysis of electrocardiosignals in the diagnosis of myocardial infarction" was held.

On November 18, 2022, a meeting of the dissertation council was held to further evaluate the research of doctoral student Alimbaeva Zhadyra in the specialty 6D071600 - "Instrument Engineering" on the topic "Neuroline analysis of electrocardiosignals in the diagnosis of myocardial infarction", approve the research of the dissertation work on the acceptance of documents and choose a temporary dissertation choice.

On December 21, 2022, a meeting of the dissertation council for the defense of the dissertation work of Alimbayeva Zhadyra Nurdauletovna was held on the topic: " Neuroline analysis of electrocardiosignals in the diagnosis of myocardial infarction".

2. There are no names of council members who attended less than half of the meetings.

3. List of doctoral students indicating the organization of training.

No	Full name of the doctoral student	Organization of training
1	Asylbekova Lyaida Ramazankyzy (8D07105- Biomedical Engineering)	Satbayev University
2	Magzumov Zhambolat Tynymbaevich (8D07106 - "Robotics and mechatronics")	Satbayev University
3	Mahonin Vladimir E. (8D07106 - "Robotics and Mechatronics")	Satbayev University
4	Kozhakhonov Symbat Baltabekovich (8D07106- "Robotics and mechatronics")	Satbayev University
5	Serebryakov Stepan Sergeevich (8D07106 - "Robotics and mechatronics")	Satbayev University

4. A brief analysis of the dissertations reviewed by the council during the reporting year, with the following sections highlighted:

4.1 Analysis of the subject of the reviewed works.

4.1.1. Analysis of the work of Issabekov Zhanibek Nazarbekuly:

Dissertation topic "Motion control of a robot with a tree-like kinematic structure" specialty 6D071600 - "Instrument engineering".

The dissertation was completed at Satbayev University.

The language of protection is Kazakh.

Scientific consultants:

- Aldiyarov Nakhypbek Ualieovich - Candidate of Physical and Mathematical Sciences, Associate Professor of KazNRTU named after K.I. Satpayev, Almaty, Kazakhstan.

- Moroz Kaleria Aleksanrovna - Candidate of Technical Sciences, Associate Professor of the Don State Technical University, Rostov-on-Don, Russian Federation.

The defense took place on June 29, 2022.

Construction of a lower limb control system for humans by analogy with robotic mechanism control systems, development of a new algorithm for controlling the exoskeleton actuator, obtaining logarithmic-amplitude, phase-frequency characteristics of the branched contour of an electrohydraulic tracking drive with feedback on pressure changes in the cavities of hydraulic cylinders of the executive mechanisms of links, joints of the exoskeleton for a person with limited movements of the lower limbs, having a tree-like kinematic structure. The following research tasks were performed: Synthesis of the kinematic structure of the exoskeleton and development of the kinematics and dynamics of the actuator; diagrams of external characteristics, characteristics of torque, power, acceleration, speed were obtained; calculation of the power of the drives of the degree of motion and total power consumption.

4.1.2. Analysis of the work of Alimbaeva Zhadyra:

The topic of the dissertation is "Neuroline analysis of electrocardiosignals in the diagnosis of myocardial infarction" specialty 6D071600 – "Instrument Engineering".

The dissertation was completed at Satbayev University.

The language of protection is Kazakh.

Scientific consultants:

1. Ozhikenov Kasymbek - Candidate of technical sciences, professor, Almaty, Kazakhstan.

2. Bodin Oleg - Doctor of technical sciences, professor of Penza State University

The defense took place on December 21, 2022.

A method for selecting electrocardiosignal elements (QRS-complex and R-tooth) has been developed and proposed. The proposed method is based on the analysis of segments of the cardiocycle, respectively, the main task is to isolate the cardiocycle itself. The choice of a cardiocycle is the determination of a pair of problems that correspond to the start of two subsequent cardiocycles. To diagnose the brain, a method of electrocardiosignal neural network analysis has been developed, which is based on an amplitude-time analysis of information parameters of the EX, which is based on the determination of growth, decrease or stability in the ex-intervals, determination of fracture points, amplitude values at these points and determination of the duration of the determined intervals. This method allows you to make a diagnosis using LVQ neural networks. The approach of NJT ex has been proposed, a distinctive feature of which is the use of serial-parallel connection of NJ in the formation of a training complex for the analysis of cardiocycle segments. At the same time, along with the determination of localization, an analysis of the TRANSMURALITY or "depth" of the brain (the absence of an R-wave in the QRS complex) is carried out. When making a forecast about the state of the heart based on the assessment of the signs of localization of myocardial infarction in accordance with the table and the calculation using the logical function of the decision-making result, decisive provisions were

formulated. A model of the ex-neural network analysis method for diagnosing myocardial infarction has been developed in the Simulink graphics editor in the Matlab environment. The proposed neural network analysis method provides sensitivity and accuracy greater than 98.5%. From the comparative table, it can be seen that the assessment according to the proposed method is greater than that of traditional methods. The effectiveness of teaching this method is much higher than that of other methods.

4.2 The relationship of the topic of dissertations with national state programs, as well as Republican and regional scientific and scientific-technical programs.

4.2.1. The dissertation work of a PhD student in the specialty 6D071600 – "Instrument engineering" Issabekov Zh.N., on the topic "Motion control of a robot with a tree-like kinematic structure", was not carried out within the framework of grants.

4.2.2. Dissertation work of a PhD student in the specialty 6D071600 - "Instrument engineering" Alimbayeva Zh.N., on the topic of the dissertation "Neuroline analysis of electrocardiosignals in the diagnosis of myocardial infarction" the work corresponds to the priority direction of development of science and technology "Information, communication and space technologies" and is devoted to improving methods and means of processing electrocardiosignals based on neural network analysis to identify myocardial infarction.

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

4.3.1. The results of the dissertation work on the topic "Controlling the movement of a robot with a tree-like kinematic structure" will be used in the future to assemble an exoskeleton for a person with limited movements of the lower extremities and the introduction of new voice control systems for human walking in the rehabilitation of people with congenital defects of the feet, lower leg, hip or injury. The paper uses the methods of Denavit-Hartenberg, Dalember. The research is used in the educational process of the Engineering Department of the Eurasian Technological University in the preparation of Masters of Technical Sciences.

4.3.2. The scientific results obtained in the course of ex-neuroline analysis in the detection of myocardial infarction are used in the educational process of the Department of robotics and technical means of automation of Satbayev University and in the production process and design and research work of Central Asia Medical Inshurans LLP.

4.3.2.1. Patent RU 2 694 528 C1. Method of conducting search and rescue operations. Berdibaeva G. K. Sherstnev V. V., Bodin O. N., Bezborodova O. E., Ozhikenov K. A. Published On: 16.07.2019, Bul. № 20.

4.3.2.1. Patent of the Russian Federation No. 2704913. myocardial infarction taldau ushin ex neurozhelilik taldau Alisi. Alimbayeva Zh. N. Bodin O. N., Bezborodova O. E., Azhikenov K. A., Published: 16.12.2018, Byul. № 20.

4.3.2.3. KAZ Patent No. 35733 C1. Electrocardiosignals adaptivti filtlau axiisi. Ozhikenov K.A., Bodin O.N., Safronov M.I. Omarbekov B.O., Ozhikenova A.K. Alimbayev Ch.A. Alimbayeva Zh.N., Bayanbay N.A. Published: 01.07.2022, Bureau. № 54.

5. Analysis of the work of official reviewers (with examples of the most low-quality reviews) - no.

6. There are no proposals for further improvement of the system of training scientific personnel.

7. Number of dissertations for the degree of doctor of philosophy (PhD), doctor by profile in the context of specialties (areas of training):

- 1) 2 dissertations accepted for defense including doctoral students from other Universities-no;
- 2) no dissertations withdrawn from consideration (including doctoral students from other Universities);

3) there are no dissertations that received negative reviews from reviewers (including doctoral students from other Universities);

4) there is no dissertation with a negative decision based on the results of the defense (including doctoral students from other Universities).

Chairman of the dissertation council

Ozhikenov A.K.

Academic Secretary of the dissertation council

Baktybayev M.K.

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