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AUTOMATION AND MONITORING OF PRODUCTION TECHNOLOGICAL PROCESSES USING IOT

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Abstract: *The main purpose of the rapid development of technologies in modern times is to replace the old ones a new type of communication that uses wired connections as a means of wireless communication, i.e. wireless communication. The Internet of Technology (IoT) is a very unique platform that is gaining popularity day by day day the reason for this is the development of technology and its capabilities to connect to everything. This feature of the link provided several things in itself a wide range of opportunities and development. It is true that technology in various fields evolved over the years, so we observe a rapid change in form, sizes and capacities of various tools, components and products used in everyday life. With a platform like IoT, this benefit is facilitated by streamlined technology the work also benefits both the manufacturer and the end user.Main The reason for moving to this type is to improve scalability, improve mobility, and reduce production time and cost. To achieve this, it is necessary to consider the type of application as well as the communication protocol should be robust and support low loss transfer. The current industrial revolution uses a variety of technologies, one of which is This is the Internet of things. IoT is a rapidly developing technology that is a network of various physical objects embedded sensors, software, and network connectivity that allow objects to collect and share data. In this paper, we propose an automation system that can make intelligent decisions for industrial applications can also automatically monitor and generate alerts using the IoT concept. Contribution of this article demonstrating the use of the system IoT in the latest industrial revolution. Help improve IoT access to the application from anywhere in the world. The IoT connects anything to the Internet by definition protocols that allow devices to communicate intelligently with intelligent monitoring and increase capacity performance indicators increase.*

Keywords*: Automation, monitoring, industrial IoT, server, sensors, wireless sensor.*

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Introduction

Industrial automation can be defined as the use of different control systems that control different mechanisms processes in industry to reduce human effort. The current focus of automation has shifted to augmentation flexibility and quality in the process that depends on increasing productivity, employee safety and reducing costs with human operators. This type of automation eliminates costs associated with health care, paid time off, and holidays related to man. In addition, the industry has less maintenance costs associated with machinery as only maintenance engineers are involved in its maintenance. All this is usually associated with high initial costs, but this leads to significant costs subsequently saving costs for the industry. IoT

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enables a variety of sensors after sensing, regularly exchanging information and communicating with all devices connected to each other Internet. This data is then analyzed to make and take intelligent decisions to manage production more efficiently. IoT It allows us to share information with various devices connected via the Internet, which makes us smarter monitoring and management. The Industrial Internet is the convergence of several key technologies to produce a larger system the sum of its parts. Recent advances in sensor technology, such as a sensor, can produce more than just data clear but predictable. Similarly, through their controllers, machine sensors can be self-aware, self-predictive, and self-comparison. For example, they can compare their existing configuration and environment settings with preconfigured ones optimal data and thresholds. It provides self-diagnosis. Sensor technology has declined significantly recent years in terms of price and volume. It can make machines, processes and even people financial and technically possible. Recognizing the advancements and emerging applications in IoT technology, our motivation in this research review is to explore the advantages, disadvantages, opportunities, and challenges inherent in IoT technology, protocols, and its applications. Our survey is different from the survey listed above. We have chosen a large number research papers and this article mainly provides an overview of the life changing phenomenon of IoT and various technologies, challenges and real world applications. He followed him who revolutionized our world with his angry world view. Contributions papers are summarized as follows. In particular, firstly, this article provides a comprehensive overview of IoT technology in terms of RFID, which provides a wireless sensor network. technologies, antennas for IoT technology.

Technology in IoT

In IoT applications, the transmission of data generated by devices or resources is mandatory to the internet. Proof of connectivity and coverage is a challenging task for IoT applications. Users or vendors have always wanted to collect data and analyze it for further processing further improving their devices. New technologies should be introduced properly for data transmission and processing. Better than switching to another network a privileged network would be a good choice, especially for its own applications. These days, networks are actively involved in the development of wired or wireless communication channels or protocols. But cost and infrastructure development play an important role in development Technology for IoT. The technology embedded in IoT is shown in Picture 1. Brief information A description of each of these elements will be described later.

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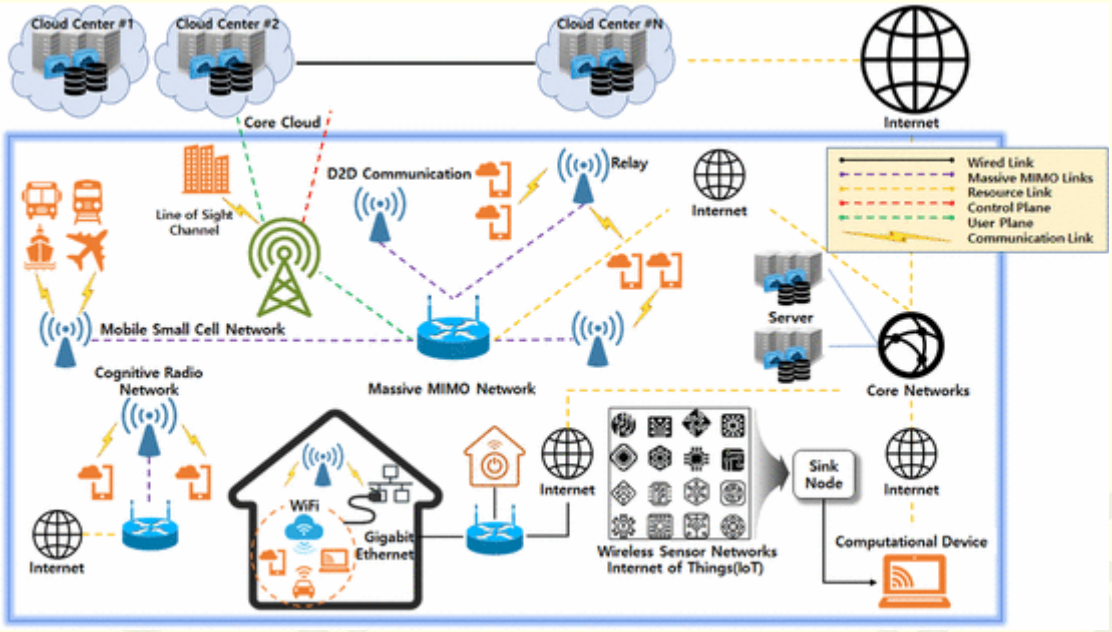

Picture 1. Scheme of technologies embedded in IoT

The first tag describes the antenna. It tends to gather energy to channelize. This energy build-up consists of a fact-based feature if the area of the corresponding tag antenna is larger and vice versa. Tag antenna is possible produced using an assortment of materials. They can be printed, scratched or stamped Conductors are stored in ink or even vapor labels. Tag antenna not only transmits the wave that transmits the data is placed on the tag, but in addition it must also receive wave from the person to provide vitality for the tag operation. The tag must be an antenna small volume, minimal effort and easier to manufacture for large scale production. In general, the tag receiving device should have a multi-directional beam or a hemispherical circle. Often, the impedance of the label chip is not 50 ohms the radio wire must directly understand the conjugate match with the label chip, to provide maximum energy to the tag chip. Tag antenna hardware can be a signal turn or multiple turns as shown here. While the development of wireless sensor networks was inspired by military applications, today they consist of free gadgets that use the sensor to display the screen. physical conditions applied to industrial infrastructure, robotics, well-being, activity and many customer areas. Wireless sensor network is part of the IoT class. Reconfigurable homogeneous or heterogeneous network scenarios need of the hour for IoT such as network automation. Industrial automation monitor and control now is an important day. Automation is something that moves on its own means controlling the system without human interference and compare manual handling. The control is a group of techniques that control the system provides the required input signal. This article develops a system it automatically monitors and controls the industry electrical equipment and gives warnings to the authorized person Using the concepts of IoT, wireless devices, smartphones, and built sensor IoT. An embedded system is a computer other than a computer a personal computer to carry out a special purpose. Embedded systems are mixtures of components along with internal, chemical, exciting undisturbed computer. Based on their operational and interpretation the set conditions are divided into four sections. Real includes hard and soft set time system. As you know, IOT is not a new concept, although it is a new to

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deligence. This concept was not difficult, however thing is coercion. IOT explains a system within a system where the agenda is the sensual world and all the sensors devices it depends on the randomness, it depends on the sensors to the internet. Communication between sensors target or devices or control unit or vice versa wireless LAN connections Can be WIFI, Bluetooth etc.

Challenges in IoT security

Since the basic principle of IoT involves connecting devices, it makes everything addressable and can be located, which in turn makes our lives easier. However, doing anything connected to the internet opens the door to hackers. Right unsure about privacy and security, the user is not involved in IoT. Therefore, it must have a strong infrastructure following are some of the challenges that IoT may face when dealing with security. Security Breach Sensor Nodes in Wireless Sensor Networks IoT will be bilateral. Data acquisition is possible in addition to transmission. Some possible attacks in this scenario include modifying what might be data on the node issued or modified. The next flood will cause many problems in IoT. When we once security problems from Android Connect IoT to android, unlike IOS android, this is an open source network, i.e it can be easily identified. After the front-end devices are hacked, the IoT network exposed. The problem of updating software is usually faced by developers because it is high cost and memory, they do not update their software and hardware. After the hackers discovered devices are easily accessible. Cloud computing in IoT is a big network allows sharing of resources and there are some security threats that shared resources face given below. In addition, smart mobile sensors and devices can do amazing things broad requirements of users and providers. One of the reasons for wireless connectivity The computing power is constantly increasing along with the decrease in device development energy consumption and improved communication capabilities of devices. An additional check for processing large amounts of data from sensors mobile and dynamic cloud computing solutions are also provided. Make it happen new services will most likely be based on the use of cloud services. this, but it creates additional problems in areas such as management, security, technical solutions, infrastructure modeling, mobile device support, and more.

Conclusion

In the field of embedded systems, the Internet of Things is a popular asset for the fourth industrial revolution, and at the same time has become an important topic for research. An IoT system is a heterogeneous system in terms of different software and physical devices are connected to each other. Industrial automation with IoT has a big scope in both equipment and software, which reduces human intervention and provides monitoring capabilities that can be intelligently controlled anywhere in the world It is widely recognized that IoT-related technologies and applications are still in their infancy. There still is various issues for industrial use such as privacy, security, standardization, technology. Of course it's good Efforts should be made to address these various challenges and explore the various characteristics of the industry Ensure IoT devices are well equipped in industrial environments. A strong understanding of these features and Various requirements such as privacy, security and cost are required for IoT adoption and implementation. Networks are brought to standard. The IoT is a very complex network that involves connectivity between different communication

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technologies different types of networks. Currently, there is a lack of a widely accepted common platform that can often be the cause delays and communication problems when working with large amounts of data at the same time. Integrating IoT with existing IT infrastructure requires a lot of work, as integrating IoT devices requires different middleware solutions that can become a difficult task to work with existing software and web services various industries. In order for new IoT technologies to be adopted and widely distributed, it is necessary to protect data privacy and ensure information security are very necessary and difficult to achieve because of the variety of technologies currently available does not meet the strict safety and security requirements of the industry. O'telbayev Azizbek, a student of the Nukus Mining Institute at the Navoi State University of Mining and Technology, gave several examples of the processes of their application in mining and presented to international journals the methods of automation of mining technologies through microprocessors and the technologies in mining at the same time. proved with several examples that it can be used in several technological processes. The use of modern technologies plays an important role in the development economy of the mine. It is necessary to pay attention to the parameters of technologies when automating processes in mining enterprises. Do not set the load beyond the limits of the technology, only then the technology will work for a long time without problems. In this article, I will inform you that if we install a microprocessor (automatic mode memory) in the technology in the mining enterprises, we will prevent the overloading of the technology. This ensures the operation of the enterprise and the safety of workers.

References

1. Djaksimuratov, K., O’razmatov, J., Yuldashev, S., Toshpulatov, D., & O’telbayev, A. (2021). Geological-Geochemical and Mineralogical Properties of Basalt Rocks of Karakalpakstan.
2. Djaksimuratov Karamatdin Mustapaevich, O’telbayev Azizbek Alisher o’g’li, O’razmatov Jonibek Ikromboy o’g’li, & Mnajatdinov Dastan Mnajatdin o’g’li. (2021). PROPERTIES OF COAL, PROCESSES IN COAL MINING COMPANIES, METHODS OF COAL MINING IN THE WORLD. JournalNX - A Multidisciplinary Peer Reviewed Journal, 7(10), 231–236. https://doi.org/10.17605/OSF.IO/32N4G
3. Djaksimuratov, K., Toshev, O., O’razmatov, J., & O’telbayev, A. (2021). MEASURING AND CRUSHING THE STRENGTH OF ROCKS USE OF VARIOUS TYPES OF SURFACTANTS FOR GRINDING.
4. Djaksimuratov, K., Ravshanov, Z., O’razmatov, J., & O’telbayev, A. (2021). Comprehensive monitoring of surface deformation in underground mining, prevention of mining damage. Modern technologies and their role in mining.
5. Djaksimuratov, K., O’razmatov, J., Maulenov, N., & O’telbayev, A. (2021). FACTORS INFLUENCING THE CONDITIONS OF OPEN PIT MINING, ORE MASS AND DEFORMATION, PROCESSES THAT LEAD TO IMBALANCE DURING EXCAVATION.
6. Djaksimuratov, K., Jumabayeva, G., Maulenov, N., & Rametullayeva, M. (2022). Improving the Efficiency of Excavators Increasing the Efficiency of Temporary Ditch Excavator.

ISSN: 2181-3868 SJIF-2023: 3.812 | ISI: 0.539 | VOLUME 1, ISSUE 6, 2023

7. Djaksimuratov, K., Jumabayeva, G., Maulenov, N., & Rametullayeva, M. (2022). MONITORING THE CONDITION OF THE DEPOSIT IN MINING ENTERPRISES. MODERN METHODS OF DETERMINING THE LOCATION OF MINERALS.
8. Djaksimuratov, K., Joldasbayeva, A., Bayramova, M., Tolibayev, E., & Maulenov, N. (2022). TECHNOLOGICAL CLASSIFICATION OF UNDERGROUND EXCAVATION WORKS IN GEOTECHNICAL MONITORING SYSTEMS.
9. Djaksimuratov, K., Maulenov, N., Ametov, R., Rametullayeva, M., & Bayramova, M. (2022). MODERN TECHNICAL METHODS OF MONITORING LANDSLIDES IN OPEN MINES.
10. Joldasbayeva, A., Ametov, R., Embergenov, A., Maulenov, N., & Kulmuratova, A. (2022). Technology to prevent Methane or coal dust explosions in the mine.
11. Djaksimuratov, K., Maulenov, N., Rametullayeva, M., Kulmuratova, A., & Embergenov, A. (2022). Technology for Determining the Force of Impact on Buildings in the Vicinity during Blasting Operations in Mines.
12. Djaksimuratov, K., Jumabayeva, G., Maulenov, N., & Rametullayeva, M. (2022). CORROSION OF METALS AND FACTORS AFFECTING IT. METHODS OF PREVENTING CORROSION OF METALS.
13. Kulmuratova Aliya Janabay qizi, Utepbaeva Gulnaz Saken qizi, O‘telbayev Azizbek Alisher o‘g‘li, Azizov Azatbek Jumabek o‘g‘li, & Yo’ldashova Hilola Baxtiyor qizi. (2022). AUTOMATION AND ROBOTIZATION OF UNDERGROUND MINES. International Journal of Innovations in Engineering Research and Technology, 9(10), 20–28. https://doi.org/10.17605/OSF.IO/UYH93
14. Ravshanov Zavqiddin Yahyo o‘g‘li, O‘telbayev Azizbek Alisher o‘g‘li, O‘razmatov Jonibek Ikromboy o‘g‘li, Zaytova Madina Nazarbay qizi, & Kulmuratova Aliya Janabay qizi. (2022). Conveyor belt structure and mode of operation in mines. Eurasian Journal of Engineering and Technology, 11, 72–80. Retrieved from https://www.geniusjournals.org/index.php/ejet/article/view/2360
15. Mustapaevich, D. K., Axmet o‘g‘li, M. N., Baxitbay qizi, J. A., Alisher o‘g‘li , o‘telbayev A., & Ikromboy o‘g‘li , O. J. (2022). Model Of Stages of Determination of Strength of Dynamic Fracture of Rocks and Digital Technological Verification. Miasto Przyszłości, 28, 230–239. Retrieved from https://miastoprzyszlosci.com.pl/index.php/mp/article/view/620
16. Djaksimuratov Karamatdin Mustapaevich, Ravshanov Zavqiddin Yahyo o‘g‘li, Ergasheva Zulxumor Abdaaliyevna, O‘razmatov Jonibek Ikromboy o‘g‘li, & O‘telbayev Azizbek Alisher o‘g‘li. (2022). Underground mine mining systems and technological parameters of mine development. INTERNATIONAL JOURNAL OF SOCIAL SCIENCE & INTERDISCIPLINARY RESEARCH ISSN: 2277-3630 Impact Factor: 7.429, 11(10), 110–117. Retrieved from https://www.gejournal.net/index.php/IJSSIR/article/view/1016
17. Mustapaevich, D. K., Axmet o‘g‘li, M. N., Baxitbay qizi, J. A., Alisher o‘g‘li, O. A., & Ikromboy o‘g‘li, O. J. (2022). Methods of Determining the Effect of Temperature

and Pressure on the Composition of Rocks. Vital Annex : International Journal of Novel Research in Advanced Sciences, 1(4), 98–106. Retrieved from https://innosci.org/IJNRAS/article/view/393

18. Ravshanov Zavqiddin Yahyo o‘g‘li, O‘telbayev Azizbek Alisher o‘g’li, Joldasbayeva Aysulu Baxitbay qizi, & Bayramova Minevvar Axmet qizi. (2023). MINING TECHNOLOGICAL EQUIPMENT THAT DETERMINES THE SLOPE ANGLES OF THE MINE BY MEANS OF LASER BEAMS. Neo Scientific Peer Reviewed Journal, 6, 17–23. Retrieved from https://neojournals.com/index.php/nspj/article/view/96
19. Yeshmuratova, A., Kulmuratova, A., Maulenov, N., & Otemisov, U. (2023). MINE BLASTING PROCESSES OPTIMIZATION STAGES OF DIGITAL TECHNOLOGY OF DETONATORS.
20. Ravshanov, Z., Joldasbayeva, A., Maulenov, N., & O’telbayev, A. (2023). Determination of mineral location coordinates in geotechnology and mining enterprises.
21. Djaksimuratov, K., Batirova, U., Otemisov, U., & Aytmuratov, S. (2023). STEPS FOR DETERMINING THE SLOPE ANGLE OF AN OPEN MINE.
22. Djaksimuratov, K., Batirova, U., Abdullaev, A., & Joldasbayeva, A. (2023). GATHERING COORDINATES OF THE GEOLOGICAL AND GEOTECHNICAL LOCATION OF THE MINE.
23. Ravshanov, Z., Joldasbayeva, A., Bayramova, M., & Madreymov, A. (2023). IN GEOLOGICAL AND GEOTECHNICAL PROCESSES IN THE MINE USE OF TECHNOLOGICAL SCANNING EQUIPMENT IN THE UNDERGROUND MINING METHOD.
24. Djaksimuratov, K., Jumabayeva, G., Maulenov, N., & Rametullayeva, M. (2022). Casting And Evaluation of Properties for an Aluminum Alloy Material and Optimizing the Quality Control Parameters.
25. Djaksimuratov, K., Jumabayeva, G., Batirova, U., & O’telbayev, A. (2023). GROUNDWATER CONTROL IN MINES
26. Abdiramanova, Z., Jumabayeva, G., Batirova, U., & O’telbayev, A. (2023). ACTIVITY OF TEBINBULAK IRON ORE MINING ENTERPRISES IN THE REPUBLIC OF KARAKALPAKSTAN.
27. Qurbonov.A.A, Djaksimuratov Karamatdin Mustapaevich, & O'telbayev Azizbek Alisher o'g'li. (2021). FACTORS INFLUENCING THE CONDITIONS OF OPEN PIT MINING, ORE MASS AND DEFORMATION. PROCESSES THAT LEAD TO IMBALANCE DURING EXCAVATION. Eurasian Journal of Academic Research, 1(6), 45–49. https://doi.org/10.5281/zenodo.5500210
28. O‘telbayev Azizbek Alisher o‘g‘li. (2022). STRENGTH PROPERTIES OF ROCKS AND FACTORS INFLUENCING THEM AND THE PROCESS OF CHANGING THE PROPERTIES OF ROCKS. https://doi.org/10.5281/zenodo.6034442

ISSN: 2181-3868 SJIF-2023: 3.812 | ISI: 0.539 | VOLUME 1, ISSUE 6, 2023

29. Joldasbayeva, A., Maulenov, N., Mnajatdinov, D., & O'telbayev, A. (2023). PROCESSES OF DRAWING UP A VENTILATION SYSTEM SCHEME IN MINES.
30. Maulenov, N., Joldasbayeva, A., O'razmatov, J., & Mnajatdinov, D. (2023). TECHNOLOGICAL MODES OF MONITORING THE LOCATION OF MINES IN THE MINE AND THE SLOPE BORDER OF THE BLAST AREA.
31. Maulenov, N., Joldasbayeva, A., Amanbaev, N., & Mnajatdinov, D. (2023). PROCESSES OF BENEFICIATION AND EXTRACTION OF ORES IN IRON MINES (IN THE EXAMPLE OF TEBIN BULAK IRON MINE).
32. Maulenov, N., Joldasbayeva, A., Amanbaev, N., & Mnajatdinov, D. (2023). DETERMINATION OF VIBRATIONS CAUSED BY BLASTING PROCESSES IN OPEN PIT MINING AT MINING ENTERPRISES.
33. Maulenov, N., Joldasbayeva, A., O'razmatov, J., & Mnajatdinov, D. (2023). MOBILE TECHNOLOGICAL METHODS OF SAFETY MANAGEMENT IN SURFACE MINING.
34. Utepbaeva Gulnaz Saken qizi, Urazbayeva Aqmaral Sulayman qizi, Joldasbaeva Feruza Jan'abay qizi, O'telbayev Azizbek Alisher o'g'li. (2023). FOAM FLOTATION PROCESS, STAGES AND TECHNOLOGICAL PARAMETERS. https://doi.org/10.5281/zenodo.7641035
35. Patualieva, Q., Joldasbaeva, J., & Eshimbetova, M. (2023). STAGES OF USING GEODETIC METHODS IN OPEN MINING CONDITIONS.
36. O'TELBAYEVA Muhayyo Alisherovna. (2023). METHODOLOGY AND THEORY OF CHEMISTRY TEACHING IN SCHOOLS, METHODS AND PROCESSES OF THEIR STUDY. Journal of Experimental Studies, 2(2), 10–16. https://doi.org/10.5281/zenodo.7623700
37. O'TELBAYEVA Muhayyo Alisherovna. (2023). ANALYSIS OF PEDAGOGICAL AND PSYCHOLOGICAL METHODS AND APPROACHES. Pedagogical and Psychological Studies, 2(2), 12–16. https://doi.org/10.5281/zenodo.7624764
38. Jumabayeva Guljahon Jaqsilikovna. (2023). CONTROL OF UNDERGROUND WATER IN THE MINE, DETECTION AND PREVENTION OF RISKS. ACADEMIC RESEARCH IN MODERN SCIENCE, 2(5), 159–166. https://doi.org/10.5281/zenodo.7648010
39. Patualieva, Q. (2023). METHODS OF DETERMINING THE COORDINATE DIMENSIONS OF AN OBJECT ON MAPS, CARTOGRAPHY AND GEOGRAPHIC LOCATIONS.
40. Mustapaevich, D. K., o'g'li, M. N. A., qizi, J. A. B., o'g'li, O. A. A., & qizi, K. A. J. (2022). Calculation of the Technological Scheme of Traffic Control of Mine Transport in Open Mines. International Journal on Orange Technologies, 4(10), 34-42. Retrieved from https://journals.researchparks.org/index.php/IJOT/article/view/3570

41. Утемисов А. О., Юлдашова Х. Б. К. СИСТЕМЫ АВТОМАТИЧЕСКОГО УПРАВЛЕНИЯ //Universum: технические науки. – 2022. – №. 5-2 (98). – С. 45-47.
42. Utemisov, A. (2019). Таълим жараёнида компьютер ва инновацион технологияларнинг роли.
43. Ametov Bayram Tursynbaevich, Uzakbaeva Akmaral Sulayman Kizi, & Allamuratov Guljamal Bisengali Kizi. (2022). Wind Mill and Solar Energy. Texas Journal of Engineering and Technology, 15, 178–179. Retrieved from https://zienjournals.com/index.php/tjet/article/view/3068
44. Аметов, Б. Т. (2021). Возникновение И Распространение Ударной Волны В Твердом Теле.IJTIMOIY FANLARDA INNOVASIYA ONLAYN ILMIY JURNALI,1(6), 42-44.
45. Аметов, Б. Т., Султанбаев, А. П., & Жангабаев, А. К. (2021). ВОЗМОЖНОСТИ И ПРОБЛЕМЫ ИСПОЛЬЗОВАНИЯ ВОЗОБНОВЛЯЕМЫХ ИСТОЧНИКОВ ЭНЕРГИИ. InКОНКУРС МОЛОДЫХ УЧЁНЫХ(pp. 72-74).
46. Tursynbaevich, A. B., Kizi, U. A. S., & Kizi, A. G. B. (2022). Wind Mill and Solar Energy.Texas Journal of Engineering and Technology,15, 178-180.
47. АМЕТОВ Б. Т., АМИДУЛЛАЕВА Ю. Б. К., КИЗИ И. О. И. РАДИАЦИОННО-СТИМУЛИРОВАННОЕ ИЗМЕНЕНИЕ ОПТИЧЕСКИХ ХАРАКТЕРИСТИК КВАНТОВО-РАЗМЕРНЫХ СТРУКТУР СОЕДИНЕНИЙ A2B6 //Studies in Economics and Education in the Modern World. – 2022. – Т. 1. – №. 9.
48. АМЕТОВ Б. Т., КИЗИ А. М. М., КИЗИ К. А. Ж. ВЛИЯНИЕ МИКРОВОЛНОВОЙ ОБРАБОТКИ НА СВОЙСТВА АРСЕНИДГАЛЛИЕВЫХ ДИОДНЫХ СТРУКТУР С БАРЬЕРОМ ШОТТКИ //ЛУЧШАЯ НАУЧНАЯ СТАТЬЯ 2022. – 2022. – С. 8-10.
49. Бубякин М. Ю. ИСПОЛЬЗОВАНИЕ 3D ПРИНТЕРА ДЛЯ АДДИТИВНОГО ИЗГОТОВЛЕНИЯ ДЕТАЛЕЙ //КОНКУРС МОЛОДЫХ УЧЁНЫХ. – 2021. – С. 55-60.
50. Аметов Б. Т. ОБРАЗОВАНИЕ СТРУКТУРЫ TE-CDTE CO СВОЙСТВОМ ЭЛЕКТРОННОГО ПЕРЕКЛЮЧЕНИЯ ПРИ ИМПУЛЬСНОМ ЛАЗЕРНОМ ОБЛУЧЕНИИ CDTE //Интернаука. – 2021. – Т. 10. – №. 186 часть 2. – С. 18.
51. A.A. Eshmuratova. (2022). MATCAD DASTURIDAN FOYDALANIB IKKI VA UCH O`LCHOVLI GRAFIKLARNI QURISH . Journal of Integrated Education and Research, 1(5), 534–539. Retrieved from https://ojs.rmasav.com/index.php/ojs/article/view/341
52. Kaipbergenov, Atabek Tulepbergenovich, Askarbek Orazimbetovich Utemisov, and Hilola Bakhtiyor Kizi Yuldashova. "STEADY OF AUTOMATIC CONTROL SISTEMS." Academic research in educational sciences 3.6 (2022): 918-921.
53. Tulepbergenovich, Kaipbergenov Batirbek, and Utemisov Askarbek Orazimbetovich. "Classification and analysis of computer programs for the physical preparation of athletes and expasure of prospects for their studies." European science review 7-8 (2015): 11-13.

ISSN: 2181-3868 SJIF-2023: 3.812 | ISI: 0.539 | VOLUME 1, ISSUE 6, 2023

54. Jumamuratov R., Aynazarova S., Embergenova U. KIMYONI O'QITISH VOSITALARI TIZIMI VA UNING DIDAKTIK IMKONIYATLARINI O'RGANISH //Интернаука. – 2021. – №. 16-4. – С. 90-92.
55. Жумамуратов Р. Е., Айназарова С. С. РАЗРАБОТКА УРОКА С ИСПОЛЬЗОВАНИЕМ ИНФОРМАЦИОННО-КОММУНИКАЦИОННОЙ ТЕХНОЛОГИИ ПО ТЕМЕ" СПИРТЫ" //Интернаука. – 2020. – №. 3-1. – С. 86-87.

Айназарова С. С., Жумамуратов Р. Е. ЗНАЧЕНИЕ БИОЛОГИИ В ЖИЗНИ ЧЕЛОВЕКА //Интернаука. – 2020. – №. 20-1. – С. 25-26.