

# COLLECTION

Innovation, integration and modern  
problems in the scientific activities of young  
researchers and students: theory and  
practice

www.d-pressa.com

31  
MARCH



Jizzakh, Uzbekistan

MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATION OF  
THE REPUBLIC OF UZBEKISTAN

JIZZAKH BRANCH OF THE NATIONAL UNIVERSITY OF UZBEKISTAN  
NAMED AFTER MIRZO ULUGBEK

SCIENTIFIC JOURNAL OF SCIENCE TECHNOLOGY & DIGITAL FINANCE  
JOURNAL OF INTERNATIONAL SCIENCE NETWORKS

Innovation, integration and modern problems in the scientific activities of young  
researchers and students: theory and practice collection of materials of the  
international scientific and practical conference on the topic

(March 31, 2026)

Jizzakh-2026

**Innovation, integration and modern problems in the scientific activities of young researchers and students: theory and practice** – Jizzakh: Department of economics and tourism of Jizzakh branch of the national university of Uzbekistan named after Mirzo Ulugbek, March 31, 2026, 790 pp.

**Editors in charge:** Ass.prof. Soy M.P.

In the collection of materials of the conference, the role and role of Science, Education and production in the era of globalization, the pressing problems of the issues of interaction of these processes, feedback on their solutions were presented by mature specialists of the field.

In addition, research on the scientific and practical topic, carried out in the economics, Exact Sciences, Natural Sciences and socio-humanities during the globalization period, information is presented in the scientific and practical fields, which includes the latest innovative technologies in the fields of production.

It can be argued that this collection is one of the specific intersections of current thoughts and innovative ideas of the world of science. This scientific and practical conference was actively attended by professors and scientific researchers engaged in scientific research in Uzbekistan and foreign countries. In increasing the position of the scientific and practical conference, the professors and teachers of domestic and foreign higher educational institutions made a significant contribution.

Professors and teachers of foreign higher educational institutions who actively participated in the work of the conference made a worthy contribution to the high level of interaction with scientists of our country. The processes of international cooperation with foreign countries and exchange with them in the field of Science in the era of globalization have a positive effect on the development of Higher Education, the fields of Science and production. The materials of this conference are special in that they include a wide range of research, from theoretical developments to practical solutions, demonstrating the diversity of approaches and directions in this area.

In conclusion, it should be noted that this scientific and practical conference will be a very useful collection for everyone who is interested in modern research in the fields of further development of Higher Education, Science, Education and production in the era of globalization. The authors are responsible for the content and quality of the articles and abstracts included in the collection.

7. Sevinch K., Bahrom H., Sirojiddin S. Theory of Supply and Demand. Market Equilibrium //Pedagogical Sciences and Teaching Methods. – 2022. – Т. 2. – №. 18. – С. 253-257.
8. Bo'ltakov S. et al. TURIZM SOHASIDA RAQAMLI IQTISODIYOTNI ANAMIYATI //Универсальная индексная библиотека Евразийского журнала академических исследований. – 2022. – Т. 2. – №. 12. – С. 60-62.
9. Bo'ltakov S. Innovatsion Usulda Baliq Yetishtirishning Iqtisodiy Samarodorligini Oshirish Yo 'llari (Sirdaryo Tumani Misolida) //Green Economy and Development. – Т. 3. – №. 9. – С. 666837.
10. Tojiyev J. Tadbirkorlik Subyektlari Faoliyatini Rivojlantirishda Mikromoliyalash-tirishning Xususiyatlari //Green Economy and Development. – Т. 2. – №. 5. – С. 664136.
11. Цой М., Зульфикарова Л., Наджмиддинов Д. РОЛЬ ПОДГОТОВКИ КАДРОВ ДЛЯ ТУРИСТИЧЕСКОЙ ОТРАСЛИ В РАЗВИТИИ НАЦИОНАЛЬНОЙ ЭКОНОМИКИ //Scientific practical conference. – 2025. – Т. 1. – №. 1. – С. 85-89.
12. Цой М., Камолов Д. ЗНАЧЕНИЕ И РОЛЬ ДЕЯТЕЛЬНОСТИ СУБЪЕКТОВ МАЛОГО ПРЕДПРИНИМАТЕЛЬСТВА В ЭКОНОМИКЕ: МИРОВОЙ ОПЫТ И ПРАКТИКА УЗБЕКИСТАНА //Academic literature. – 2025. – Т. 1. – №. 1. – С. 1-105.
13. Kamolov D., Ismoilova D. THE IMPACT OF DIGITALIZATION ON THE ECONOMY OF UZBEKISTAN //Science technology&Digital Finance. – 2023. – Т. 1. – №. 4. – С. 301-306.

## THE ETHICS OF AI IN HEALTHCARE: DIAGNOSES AND DECISION-MAKING

**Xojabekova Ramzida Uktam qizi**

*2nd year student of the Jizzakh branch of the National University of Uzbekistan*

[khubekovavar@gmail.com](mailto:khubekovavar@gmail.com)

---

**Annotation:** This article provides an in-depth analysis of the ethical considerations surrounding the use of artificial intelligence (AI) in healthcare, with a focus on diagnostics and clinical decision-making. It examines challenges related to accountability, algorithmic bias, transparency, patient autonomy, and data privacy. Case studies, including AI applications in oncology, radiology, and hospital predictive analytics, illustrate both the potential benefits and the risks associated with AI integration. The article argues that while AI can improve diagnostic accuracy, efficiency, and patient outcomes, ethical oversight, human involvement, and regulatory frameworks are essential to ensure responsible and equitable implementation in healthcare.

**Keywords:** Artificial Intelligence, Healthcare Ethics, Diagnostics, Clinical Decision-Making, Accountability, Algorithmic Bias, Transparency, Patient Autonomy, Data Privacy, Explainable AI, Human-in-the-Loop, Equity

Artificial intelligence (AI) is rapidly transforming the landscape of healthcare, introducing technologies that can enhance diagnostic accuracy, improve clinical decision-making, optimize treatment plans, and increase overall efficiency in patient care. Machine learning algorithms, deep neural networks, natural language processing, and predictive analytics have enabled AI systems to process vast quantities of medical data, identify complex patterns, and generate insights that were previously beyond human capabilities. From interpreting medical images to predicting patient outcomes, AI has the potential to significantly improve healthcare delivery. However, the integration of AI into clinical practice also raises profound ethical questions regarding accountability, bias, transparency, patient autonomy, and the equitable distribution of healthcare resources. This article examines the multifaceted ethical implications of AI in healthcare, with a focus on diagnostic support and decision-making processes.

AI-assisted diagnostic systems rely on sophisticated computational models that can analyze structured and unstructured medical data. In medical imaging, AI algorithms can detect abnormalities in X-rays, CT scans, MRIs, and other diagnostic modalities with high precision. These systems often employ convolutional neural networks (CNNs) that have been trained on large datasets of annotated images, enabling them to recognize patterns indicative of disease. For example, AI models can identify early-stage tumors, detect retinal damage in diabetic patients, or assess lung nodules for potential malignancy. The potential benefits are substantial: AI can reduce human error, provide second opinions in complex cases, accelerate diagnosis, and allow clinicians to prioritize patients who require urgent attention. Nevertheless, these advantages are accompanied by ethical considerations regarding the reliability of AI outputs and the degree to which clinicians can trust algorithmic recommendations.

Predictive analytics represents another domain in which AI influences healthcare decision-making. Machine learning models can analyze historical patient data, laboratory results, genetic information, and lifestyle factors to forecast disease progression, hospital readmissions, and potential complications. For instance, AI systems can predict which patients are at higher risk of sepsis or cardiac events, enabling proactive interventions. While predictive analytics can improve patient outcomes, it also raises concerns regarding algorithmic bias. AI models are trained on existing datasets, which may reflect historical disparities in healthcare access and treatment. Consequently, predictions could unintentionally perpetuate inequalities, disadvantaging certain demographic groups based on race, gender, socioeconomic status, or geographic location.

One of the most significant ethical challenges of AI in healthcare is accountability. When AI systems provide diagnostic recommendations or treatment suggestions, responsibility for clinical decisions becomes ambiguous. If a

misdiagnosis occurs due to algorithmic error or system malfunction, it may be unclear whether liability rests with the healthcare provider, the software developer, or the institution implementing the technology. This ambiguity necessitates the establishment of clear guidelines and regulatory frameworks to delineate responsibilities, ensure patient safety, and maintain public trust.

Transparency and explainability are also critical ethical considerations. Many AI models, particularly deep learning networks, operate as “black boxes,” producing outputs without providing clear reasoning. Clinicians may be unable to fully understand how an AI system arrived at a particular conclusion, making it challenging to justify decisions to patients or peers. Explainable AI (XAI) seeks to address this issue by designing systems that provide interpretable outputs, highlighting the features or data points that influenced a decision. Explainability is essential not only for clinician trust but also for informed patient consent and shared decision-making.

Patient autonomy and informed consent represent another layer of ethical complexity. Patients have a right to understand how AI contributes to their care, the limitations of AI systems, and the potential risks involved. Achieving truly informed consent is challenging given the technical complexity of AI algorithms. Clinicians must communicate these concepts in accessible terms, ensuring that patients can make educated decisions about their care. Furthermore, the use of AI in healthcare must respect the principle of beneficence, prioritizing patient well-being while minimizing harm.

Data privacy and security are foundational ethical concerns. AI systems rely on large volumes of sensitive personal health information to function effectively. Ensuring the confidentiality and security of this data is essential to prevent breaches, misuse, or unauthorized access. Ethical implementation of AI in healthcare requires robust data governance frameworks, including encryption, anonymization, and strict access controls. Patients must trust that their information will be protected, or they may be reluctant to participate in AI-driven care, undermining the effectiveness of these technologies.

Case studies illustrate both the promise and the challenges of AI in healthcare. IBM Watson for Oncology, for example, uses AI to recommend personalized cancer treatment options by analyzing patient records and medical literature. While Watson has demonstrated potential to enhance decision-making, it has faced criticism for errors, inconsistent recommendations, and overreliance on incomplete datasets. Similarly, AI in radiology has shown high accuracy in detecting diseases such as diabetic retinopathy or lung cancer. Yet, integrating AI into diagnostic workflows requires careful validation, continuous monitoring, and human oversight to prevent misdiagnosis and ensure ethical practice. Predictive risk models in hospitals, designed to identify patients at risk of deterioration, further highlight ethical concerns regarding fairness, as biased datasets can result in unequal treatment and exacerbate existing disparities in healthcare delivery.

Balancing AI efficiency with ethical responsibility involves several strategies. Incorporating human-in-the-loop systems ensures that clinicians remain actively

engaged in reviewing AI-generated recommendations, preserving accountability and professional judgment. Bias mitigation techniques, such as developing models with diverse and representative datasets, conducting algorithm audits, and applying fairness metrics, help minimize discriminatory outcomes. The implementation of explainable AI enhances transparency, allowing clinicians to understand and communicate the reasoning behind recommendations. Effective data governance, coupled with robust cybersecurity measures, safeguards patient privacy and strengthens public trust. Regulatory oversight is essential to define ethical standards, establish liability frameworks, and ensure that AI systems are deployed responsibly and safely.

Looking forward, AI will play an increasingly central role in healthcare decision-making, from autonomous surgical systems to mental health interventions and precision medicine. The complexity of ethical challenges will grow alongside technological advancements, necessitating interdisciplinary collaboration among clinicians, ethicists, data scientists, policymakers, and patient advocacy groups. Public engagement and education are crucial to foster trust, facilitate informed consent, and ensure that AI serves the broader goals of equitable, effective, and patient-centered healthcare.

In conclusion, the ethics of AI in healthcare encompass a broad spectrum of issues, including accountability, bias, transparency, patient autonomy, and data privacy. While AI has the potential to enhance diagnostic accuracy, streamline clinical decision-making, and improve patient outcomes, its integration into healthcare must be guided by ethical principles, regulatory frameworks, and human oversight. Responsible deployment of AI technologies promises to transform healthcare while maintaining trust, fairness, and moral integrity. Ethical vigilance, continuous evaluation, and interdisciplinary collaboration are essential to ensure that AI fulfills its potential as a tool that supports, rather than replaces, human clinical judgment.

### References

1. National Academies of Sciences, Engineering, and Medicine. (2019). *Artificial Intelligence in Health Care: The Hope, The Hype, The Promise, The Peril*. Washington, DC: The National Academies Press.
2. Topol, E. J. (2019). *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. New York: Basic Books.
3. Rajkomar, A., Dean, J., & Kohane, I. (2019). Machine learning in medicine. *New England Journal of Medicine*, 380(14), 1347–1358.
4. Char, D. S., Shah, N. H., & Magnus, D. (2018). Implementing machine learning in health care—addressing ethical challenges. *New England Journal of Medicine*, 378, 981–983.
5. Saitov S., Asrayev S. O ‘zbekistonda davlat moliya tizimidagi islohotlar va rivojlantirish istiqbollari //International Journal of scientific and Applied Research. – 2024. – T. 1. – №. 2. – C. 53-63.

6. Tuychieva N., Saitov S. Bank resources in the modernization of the economy //Science technology&Digital finance. – 2023. – T. 1. – №. 4. – C. 41-52.
7. Sirojiddin S. Possibilities of Applying World Experience of Organizing Free Economic Zones in Uzbekistan //Web of Scientist: International Scientific Research Journal. – 2022. – T. 3. – №. 11. – C. 1388-1413.
8. Sirojiddin S., E'zoza D., Abror E. Theories of perfect and imperfect competition //Web of Scientist: International Scientific Research Journal. – 2022. – T. 3. – №. 11. – C. 1414-1434.
9. Saitov S. AVTOMOBIL TRANSPORT KORXONALARIDA BUXGALTERIYA HISOBINI TAKOMILLASHTIRISHNING YO'LLARI VA USULLARI: <https://doi.org/10.5281/zenodo.14513570>//International scientific and practical conference.–2024 //T. – T. 1. – №. 2. – C. 90-94.
10. Sirojiddin S. et al. Small business and private entrepreneurship is a place to provide employment //Journal of Academic Research and Trends in Educational Sciences. – 2022. – T. 1. – №. 12. – C. 115-119.
11. Kamolov D., Ismoilova D. RAQAMLASHTIRISHNING O'ZBEKISTON IQTISODIYOTIGA TA'SIRI //Science technology&Digital finance. – 2023. – T. 1. – №. 4. – C. 301-306.
12. Sirojiddin S., Nodira T., Dinora S. Characteristics of price and formation //Journal of Academic Research and Trends in Educational Sciences. – 2022. – T. 1. – №. 11. – C. 265-270.
13. Saitov S. Improvement of accounting and audit in road transport enterprises. SPAST Abstracts, 2 (02) [Электронный ресурс].
14. Saitov S. TRANSPORT KORXONALARIDA BUXGALTERIYA HISOBINI TAKOMILLASHTIRISH //Journal of Contemporary World Studies. – 2024. – T. 2. – №. 4. – C. 41-47.
15. Sevinch K., Bahrom H., Sirojiddin S. Theory of Supply and Demand. Market Equilibrium //Pedagogical Sciences and Teaching Methods. – 2022. – T. 2. – №. 18. – C. 253-257.
16. Saitov S., Asrayev S. MECHANISMS FOR INCREASING EMPLOYMENT THROUGH THE DEVELOPMENT OF SOCIAL ENTREPRENEURSHIP //Scientific practical conference. – 2025. – T. 1. – №. 1. – C. 335-339.
17. Saitov S. et al. ZAMONAVIY FILOLOGIYA FANLARIDAGI DOLZARB MASALALAR //Scientific practical conference. – 2025. – T. 1. – №. 1. – C. 419-422.
18. Kamolov D., Asrayev S. STATE POLICY FOR THE DEVELOPMENT OF COMPETITION IN UZBEKISTAN //Science technology&Digital Finance. – 2023. – T. 1. – №. 4. – C. 353-361.
19. Eshboyeva M., Eshboyev T., Saitov S. GREEN ECONOMY AS THE FOUNDATION OF SUSTAINABLE DEVELOPMENT: GLOBAL PERSPECTIVES AND NATIONAL STRATEGIES //Scientific practical conference. – 2025. – T. 1. – №. 1. – C. 235-238.
20. Saitov S. et al. O'ZBEKISTONDA SANOAT KORXONALARIDA INVESTITSION FAOLIYATNI RAG'BATLANTIRISH YO'NALISHLARI

- //Новости образования: исследование в XXI веке. – 2025. – Т. 3. – №. 33. – С. 728-730.
21. Saitov S. et al. SANOAT KORXONALARIDA INVESTITSION FAOLIYATINI TAKOMILLASHTIRISHNING ILMIY-NAZARIY ASOSLARI //Новости образования: исследование в XXI веке. – 2025. – Т. 3. – №. 33. – С. 731-733.
22. Eshboyeva M., Eshboyev T., Saitov S. GREEN ACCOUNTING IN UZBEKISTAN: SUSTAINABILITY AND INTERNATIONAL FINANCIAL REPORTING STANDARDS //Scientific journals" D-PRESS SERVICES". – 2025. – Т. 1. – №. 7. – С. 88-91.
23. Saitov S., Nuraliyeva S. BOZOR IQTISODIYOTIDA PSIXOLOGIK BOSHQARUV SHAKLLARI //Scientific practical conference. – 2025. – Т. 1. – №. 1. – С. 447-452.
24. Axrorov E., Saitov S. O‘ZBEKISTONDA ISHSIZLIK DARAJASINI KAMAYTIRISH VA YANGI ISH O‘RINLARINI YARATISH //Scientific practical conference. – 2025. – Т. 1. – №. 1. – С. 136-140.
25. Цой М., Зульфикарова Л., Наджмиддинов Д. РОЛЬ ПОДГОТОВКИ КАДРОВ ДЛЯ ТУРИСТИЧЕСКОЙ ОТРАСЛИ В РАЗВИТИИ НАЦИОНАЛЬНОЙ ЭКОНОМИКИ //Scientific practical conference. – 2025. – Т. 1. – №. 1. – С. 85-89.
26. Цой М., Камолов Д. ЗНАЧЕНИЕ И РОЛЬ ДЕЯТЕЛЬНОСТИ СУБЪЕКТОВ МАЛОГО ПРЕДПРИНИМАТЕЛЬСТВА В ЭКОНОМИКЕ: МИРОВОЙ ОПЫТ И ПРАКТИКА УЗБЕКИСТАНА //Academic literature. – 2025. – Т. 1. – №. 1. – С. 1-105.
27. Saitov S. Barqaror Iqtisodiyotni Ta'minlashda Soliq Siyosatining Samaradorligi //Green Economy and Development. – Т. 3. – №. 12. – С. 668436.

## TALAB VA TAKLIF NAZARIYASI

### Xolmurodov Humoyun

*Milliy universiteti Jizzax filiali Iqtisodiyot yo‘nalishi 333-25 guruh talabasi*

*Ilmiy rahbarlar: Saitov Sirojiddin Abduvaliyevich, Tashbayev Asliddin*

*Kumakovich, Bo‘ltakov Sardor Oqbutayevich*

---

**Annotatsiya:** Ushbu akademik maqola iqtisodiyotning asosiy tamoyillaridan biri bo‘lgan talab va taklif nazariyasini chuqur tahlil qiladi. Unda talab va taklifning ta’riflari, ularning funksiyalari va bozor dinamikasiga ta’sir etuvchi asosiy omillar ko‘rib chiqiladi. Maqolada bozor muvozanati mexanizmi, uning shakllanishi va tashqi omillar ta’sirida o‘zgarishi, shuningdek, talab va taklif elastikligi turlari, ularni hisoblash usullari va iqtisodiy tahlildagi ahamiyati batafsil bayon etilgan. Nihoyat, nazariyaning amaliy qo‘llanilishi, xususan, narx nazorati, soliqlar va