ACADEMIA ONE
PEER REVIEWED JOURNALS

Open Academia: Journal of Scholarly Research
Volume 3, Issue 10, October, 2025
ISSN (E): 2810-6377
Website: https://academiaone.org/index.php/4

Artificial Intelligence And Social Life Determinism

Jafar Mustafayev
Associate Professor, University of Economics and Pedagogy
E-mail: jafar.mustafayev84@gmail.com

Zebo Karshiboyeva
Student at the University of Economics and Pedagogy
E-mail: zeboqarshiboeva7@gmail.com

Abstract: Artificial intelligence (AI) has brought about a revolution in the ways we live, work, and interact with one another. As AI technology continues to advance, it becomes increasingly important to understand how artificial and natural intelligence function, as well as their goals, advantages, and limitations. This paper explores the world of artificial intelligence and examines several well-known categories and applications of AI services, while also discussing the potential future of AI across various fields.
Keywords: Artificial intelligence, intelligent technologies, human effort, various software applications, chatbots, electronic translation services, visual programs, system and security software, specialized codes, and their significance in human life.

Introduction. In the context of a civilized society, artificial intelligence (AI) and AI-based technologies are being applied on an increasingly wide scale. These technologies represent intelligent technical systems capable of functioning simultaneously across multiple fields. This article provides a general overview of technologies developed on the basis of artificial intelligence, their operating principles, the fundamental approaches to their application in various sectors, as well as the challenges and future perspectives associated with them.

Artificial intelligence is a product of human intellectual development — a complex of technical systems that, through computer technologies, utilize programs, algorithms, and data processing methods to analyze, synthesize, and structure large databases. With its unique systems and algorithms, AI collects extensive data, statistical information, and documentation, processes them, and produces specific results for practical purposes. Today, artificial intelligence is being widely and effectively implemented in such areas as business, medicine, education, and many other fields.

In his textbook "Artificial Intelligence and Neural Networks" prepared for master's degree students, Q.A. Bekmuratov defines the main concepts and terms of artificial intelligence, including intelligent agents, models of knowledge representation, search in state space, first-order predicate logic, expert systems, Bayes' rule, fuzzy logical reasoning, neural networks, visual information processing systems, genetic algorithms, hybrid intelligent systems, and the prospects for the development of AI. The focus is primarily placed on the mathematical models, methods, and software tools for designing intelligent systems and neural networks.

As a scientific field, the creation and development of artificial intelligence have been significantly influenced by the works of foreign scholars such as N. Wiener, W. McCulloch, W. Pitts, J. McCarthy (who first introduced the term "artificial intelligence"), F. Rosenblatt, I. Sutherland, M. Minsky, S. Papert, A. Newell, H. Simon, J. Shaw, E. Feigenbaum, A.

ACADEMIA ONE
PEER REVIEWED JOURNALS
Open Academia: Journal of Scholarly Research
Volume 3, Issue 10, October, 2025
ISSN (E): 2810-6377
Website: https://academiaone.org/index.php/4

Kolmogorov, N. Chomsky, T. Winograd, M. Quillian, R. Schank, P. Winston, L. Zadeh, R. Reddy, D. Lenat, G. Hinton, J. Anderson, J.L. Lorer, T. Gvyazda, D.E. Goldberg, S. Mano, F. Martinez, N.J. Nilsson, D. Poole, and S. Russell, among others.

In the former Soviet Union and later in Russia, the formation and evolution of AI were closely associated with scientists such as A.A. Lyapunov, A.I. Berg, G.S. Pospelov, M.M. Bongard, A.V. Gavrilov, V.F. Khoroshevskiy, A.P. Ershov, L.T. Kuzin, A.S. Narinyani, A.I. Polovinkin, V.V. Chavchanidze, V.K. Finn, E.V. Popov, E.Kh. Tiugu, O.I. Larichev, A.I. Galushkin, A.V. Chechkin, D.A. Pospelov, A.I. Bashmakov, A.N. Gorban, A.V. Kolesnikov, Z. Mikhalovich, and S.D. Sht.

In Uzbekistan, significant contributions to the field of artificial intelligence have been made by scholars such as M.M. Kamilov, T.F. Bekmuratov, Sh.Kh. Fazilov, R. Khamdamov, K. Ignatyev, and A.Kh. Nishanov, who, along with their students, continue to conduct advanced research and make notable scientific achievements in this area today.

In the monograph “Training a Machine to Classify Objects” by A.G. Arkadev and E. Braverman, the authors—drawing upon the collective research of O.A. Bashkirov, E.M. Braverman, A.A. Dorofeyuk, N.V. Zavalishin, V.Ya. Lumelsky, and I.B. Muchnik—developed a framework known as the “geometric approach.” This method emphasizes the mathematical modeling of object classification processes and serves as a foundation for subsequent studies in the automation of recognition systems [25, 37–47]. Alongside this geometric approach, a statistical method was also widely applied, which seeks to reduce the problem of automatic classification to the well-known statistical issues of signal isolation under conditions of noise and hypothesis testing [2–8].

The aforementioned work, however, does not explore all aspects of this field comprehensively. Specifically, it omits methods of automatic recognition based on human-engineered features, such as Face ID technologies. These methods, which were extensively employed in constructing early learning machines [10–14], are considered outside the theoretical framework that models the learning process itself.

In addition, Dan Jurafsky and James H. Martin’s textbook “Speech and Language Processing” provides a comprehensive foundation for understanding the principles and technologies of Natural Language Processing (NLP). The book encompasses a wide range of topics, including linguistic data analysis, syntactic and semantic parsing of text, speech recognition, language modeling, and text generation and translation. It remains a cornerstone reference for researchers and practitioners in computational linguistics and artificial intelligence.

Furthermore, the monograph “Artificial Intelligence in Healthcare” by Adam Bohr and Gil Alterovitz presents an in-depth exploration of the use of AI systems in the medical domain. The authors describe the fundamental concepts, technologies, and methodologies for implementing artificial intelligence in healthcare, highlighting its conceptual applications, operational mechanisms, regulatory frameworks, ethical requirements, and policy considerations. These studies demonstrate how AI technologies are transforming the medical field by enabling predictive diagnostics, personalized treatment, and efficient healthcare management.

1. In social life, artificial intelligence technologies are grounded in such theoretical and computational models as first-order predicates, expert systems, Bayes’ rule, fuzzy logical inference, neural networks, visual information processing systems, genetic algorithms, and

ACADEMIA ONE
PEER REVIEWED JOURNALS
Open Academia: Journal of Scholarly Research
Volume 3, Issue 10, October, 2025
ISSN (E): 2810-6377
Website: https://academiaone.org/index.php/4

hybrid intelligent systems. These foundational approaches define the current trends, perspectives, and future directions of AI development across various domains.

2. The geometric approach, developed in the works of Arkadev and Braverman, emphasizes a statistical methodology that reduces the problem of automatic classification to well-known statistical challenges, such as signal isolation in noisy environments and hypothesis testing. This model provides a mathematical framework for optimizing classification accuracy and minimizing uncertainty in automated decision-making processes.

3. Natural Language Processing (NLP) is one of the subfields of artificial intelligence that enables computers to understand, interpret, and generate human language. NLP techniques have given rise to various AI-driven services that improve human-computer interaction and automate communication tasks.

a) Chatbots and Virtual Assistants. These systems enhance human–computer interaction by providing personal assistance, managing tasks, answering questions, and facilitating communication. Chatbots rely on linguistic modeling and machine learning algorithms to understand user input, extract relevant information, and generate appropriate responses.

Alexa, developed by Amazon, operates on devices such as Amazon Echo, Echo Dot, Echo Show, and Echo Plus. Through voice commands, users can interact with Alexa to play music, control smart devices, order products, check the weather, and perform other tasks.

Google Assistant, developed by Google, functions across mobile devices, Google Home, and other smart platforms. It assists users by answering questions, retrieving information, setting reminders, making calls, and playing multimedia content.

ChatGPT, developed by OpenAI, represents another form of AI-based conversational technology. It is widely used by educators, marketing specialists, content creators, and other organizations. ChatGPT serves as a text-based assistant, capable of responding to a wide range of inquiries, assisting in document creation, data retrieval, and automating service communication.

These chatbots and virtual assistants each offer distinctive features and capabilities. While Siri, Alexa, and Google Assistant operate primarily through voice-based interaction, ChatGPT functions through written text communication. Their advantages include improved user experience, enhanced customer support, increased accessibility for individuals with disabilities, and time efficiency through task automation. However, their limitations involve challenges in understanding complex or ambiguous queries, data privacy concerns, and restrictions in accessing or utilizing limited datasets.

The purpose of machine translation (MT) is to eliminate language barriers and ensure seamless communication among speakers of different languages. Notable examples include Google Translate, DeepL, and Microsoft Translator.

Google Translate is a service that employs artificial intelligence (AI) and translation technologies to translate text from one language into another. This service supports multiple languages and is capable of translating written text, spoken words, and even text embedded within images.

Google Translate operates through a vast database combined with AI-powered translation models. These models analyze language structure, interpret words and sentences, and process contextual meaning to produce accurate translations. The system uses deep

ACADEMIA ONE
PEER REVIEWED JOURNALS
Open Academia: Journal of Scholarly Research
Volume 3, Issue 10, October, 2025
ISSN (E): 2810-6377
Website: https://academiaone.org/index.php/4

learning to identify linguistic patterns, translate them, and refine results through continuous evaluation and training across a wide range of languages.

Similarly, DeepL and Microsoft Translator are translation services that utilize AI and advanced language processing technologies. DeepL is particularly known for its high-quality translation output, relying on multiple AI models and neural networks. These models analyze the original text, interpret its meaning, perform translation, and refine the translated version through feedback loops and model optimization.

The advantages of machine translation include facilitating global communication and cooperation, reducing the dependence on human translators, and enabling continuous improvement through AI advancements. However, its limitations involve potential inaccuracies when translating idiomatic expressions or complex sentences, as well as context-related translation errors.

Computer Vision (CV) is a branch of artificial intelligence that enables computers to perceive, interpret, and understand visual data such as images and objects. One of its key applications is facial recognition (Face ID), which allows automatic identification and verification of individuals based on facial features.

Facial recognition systems utilize complex algorithms and data analysis methods to detect human faces within images or videos. These systems typically follow several steps: image acquisition, data extraction, object or face detection, and pattern recognition. The operational principles of facial recognition systems vary depending on their purpose — some are designed for security and surveillance, while others serve commercial or healthcare-related functions.

Prominent examples include Clearview AI, Amazon Rekognition, and Microsoft Azure Face API.

Clearview AI is a facial recognition system developed primarily for security services. It maintains a vast database containing millions of facial images, allowing law enforcement agencies to identify individuals based on photographic evidence.

Microsoft Azure Face API, developed by Microsoft, provides capabilities for facial detection, identification, and verification. It is widely used in commerce, security, and various business sectors.

Facial recognition technologies are applied in numerous domains, including public safety, healthcare, and personalized marketing. Their advantages include enhanced security and surveillance, simplified authentication processes, and improved personalization in commercial applications. However, their disadvantages include potential privacy violations, misuse of personal data, algorithmic biases, and related legal and ethical challenges.

Artificial intelligence has achieved remarkable progress in the healthcare sector, encompassing applications ranging from diagnostics to drug discovery. Prominent examples of AI-driven healthcare services include the following:

Medical Imaging and Diagnostics

Systems such as Aidoc, Zebra Medical Vision, and PathAI aim to improve diagnostic accuracy, accelerate analysis processes, and minimize human error. These platforms employ AI algorithms to examine medical images (e.g., X-rays or MRI scans) and identify anomalies or patterns indicative of disease.

ACADEMIA ONE
PEER REVIEWED JOURNALS
Open Academia: Journal of Scholarly Research
Volume 3, Issue 10, October, 2025
ISSN (E): 2810-6377
Website: https://academiaone.org/index.php/4

The advantages of such systems include enhanced diagnostic precision, early disease detection, reduced workload for healthcare professionals, and the ability to develop personalized treatment plans. Their limitations include dependency on the quality of training data, potential algorithmic bias, ethical issues related to medical imaging, and over-reliance on AI in clinical decision-making.

Drug Discovery and Development

Examples include DeepMind's AlphaFold, Atomwise, and Insilico Medicine. Their goal is to accelerate the drug discovery process, reduce costs, and increase the success rate of new pharmaceuticals. These systems employ AI algorithms to analyze vast datasets, identify potential drug candidates, predict their efficacy, and optimize chemical structures.

The advantages of AI in drug discovery include faster and more efficient research processes, cost reduction for pharmaceutical companies and patients, and the discovery of innovative treatments for rare or complex diseases. However, the limitations include limited understanding of complex biological systems, challenges related to intellectual property and data sharing, and regulatory concerns surrounding AI-driven pharmaceutical development.

Conclusions. In the 20th century, certain artificial intelligence (AI) technologies and systems were developed that, in the 21st century, have rapidly penetrated various spheres of human life, offering innovative solutions to complex problems. These advancements have transformed industry, enabled the creation of natural language processing (NLP) techniques, enhanced computer vision, and contributed to the emergence of autonomous vehicles and AI-driven healthcare applications.

Although these AI services have achieved remarkable progress and brought significant benefits, they have also introduced a range of challenges and concerns. As artificial intelligence continues to evolve, it becomes increasingly important to maintain a balance between harnessing its potential advantages and addressing the associated ethical, legal, and social implications that accompany its widespread adoption.

REFERENCES

1. Alan Turing. "Hisoblash mashinasi va intellekt"//"Mind" jurnali. Buyuk Britaniya. 1950 yil, oktyabr.
2. Ахмедов, Б.А., Якубов, М. С. Геймификация образовательного процесса кластерный подход. INTERCONF, 2 (38), 371-378.
3. Yusupov, M., Akhmedov, B. A., & Karpova, O. V. (2020). Numerical simulation of Nonlinear Vibrations of Discrete Mass with Harmonic Force Perturbation. Acta of Turin Polytechnic Universun'iy intellektty in Tashkent, 10 (4),71-75.
4. Valiev Sh. Aql tabiati: tabiy va suniy intellect o'rtasidagi farq tahlili // "Falsafa va insoniyat: o'tmish, hozirgi zamon, kelajak" ilmiy-nazariy anjuman materiallari. ALFRAGANUS UNIVERSITY, Noyabr, 2024 yil.
5. You, Barco. (2023). The Nature of Intelligence. 10.48550/arxiv.2307.11114.
6. Pardayeva D., Niyazov F, Xushboqov I. Sun'iy intellekt tarixi, rivojlanish bosqichlari hamda insonlar hayotidagi o'rni // "Экономика и социум" jurnali, №3 (106) 2023 yil.
7. Yusupbekov N. R. Boshqarishning intellektual tizimlari va qaror qabul qilish / N. R.Yusupbekov. - Toshkent: «O'zbekiston milliy ensiklopediyasi» Davlat ilmiy nashriyoti, 2015.-572 b.
8. Nazarov X. N. Robotlar va robototexnik tizimlar. Darslik. - "MAShHUR PRESS", 2019, - 236 b.
9. Angeles J. Fundamentals of Robotic Mechanical Systems Theory, Methods, and

Algorithms. -VerlagNew York, Inc., 2003. 545 p.

10. Kurfess T. Robotics and automation handbook. CRC Press LLC, 2005. —519 p.

11. S.I.Hamrayeva, M.J.Samandarov. Sun'iy intellekt va uning asosun'iy intellektda yaratilgan texnologiyalar tahlili // Multidisciplinary Scientific Journal. 2024. March. Volume 4 | Issue 3 | 2023.

12. "Computer Vision: Algorithms and Applications" by Richard Szeliski. 2010.

13. "Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again" by Eric Topol

14. Mustafayev J. Yoshlarni uchinchi renessans ruhida tarbiyalashda ma'naviy merosning ahamiyati: sinergetik yondashuv // Tamaddun nuri. Ilmiy, ijtimoiy-falsafiy, madaniy-ma'rifiy, adabiy-badiiy jurnal. Indeks – 960. ISSN 2181-8258. -Nukus, 2023. -№7. -B. 29-33 (09.00.00; №26).

15. Mustafayev J. Islohotlarni amalga oshirishda ajdodlarimiz ma'naviy merosining o'rni // Jadidlarning ma'rifiy faoliyati: g'oyalari, maqsadlari, vazifalari va sohaga oid zamonaviy tadqiqotlar mavzusidagi respublika ilmiy-amaliy anjumani. -Toshkent, 2022, -B. 131-136.

18. Mustafayev J. The Spiritual Heritage of Thejadids: Philosophical And Synergetic Analysis // International Scientific Research Journal (WoS) of Web of Scientist. -Indoneziya, -April, 2023, -P. 888-902. -Volume 4, Issue 4, (ISSN: 2776-0979, -DOI: https://doi.org/10.17605/OSF.IO/ZPR5K, -SJIF:5.949, -Impact Factor:7.565, https://wos.academiascience.org/index. php/wos/article/view/3810).

19. Mustafayev J. Ma'naviy meros – sinergetik tadqiqot obyekti sifatida // falsaf fanlari bo'yicha falsafa doktori (PhD) dissertatsiyasi. -Samarqand, 2024, -B.121.

Websites:

https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-Intelligence/.

1. https://www.sciencedirect.com/science/article/pii/S0160289624000266
2. https://en.wikipedia.org/wiki/Philosophy_of_artificial_intelligence#CITEREFRussellNorvig2003 .
3. https://www.investopedia.com/terms/a/artificial-intelligence-ai.asp