

USE OF ARTIFICIAL INTELLIGENCE IN THE DEVELOPMENT OF AUTOMATED INFORMATION SYSTEMS

Daminova Barno Esanovna,
Associate Professor, Department of Algorithms and
Programming Technologies, Karshi State University
barnod@mail.ru
<https://orcid.org/0009-0001-4211-6082>

Yusufova Asila Nabi qizi,
Students of Karshi State University
qwqww703@gmail.com

Dustmurodova Ruxshona Yodgor qizi
Students of Karshi State University
dustmurodovaruxshona78@gmail.com

ABSTRACT	KEYWORDS
This article examines the theoretical and practical aspects of applying artificial intelligence (AI) technologies in the creation of modern automated information systems (AIS). It analyzes the impact of AI algorithms on data processing speed, decision-making accuracy, and the adaptive characteristics of these systems.	Artificial intelligence, automated systems, machine learning, neural networks, Big Data, cybersecurity, digital economy.

Introduction

Annotatsiya

Ushbu maqolada zamonaviy avtomatlashtirilgan axborot tizimlarini (AAT) yaratishda sun'iy intellekt (SI) texnologiyalarini qo'llashning nazariy va amaliy jihatlari ko'rib chiqiladi. SI algoritmlarining ma'lumotlarni qayta ishlash tezligi, qaror qabul qilish jarayonidagi aniqligi va tizimlarning adaptivlik xususiyatlariga ta'siri tahlil qilinadi.

Kalit so'zlar. Sun'iy intellekt, avtomatlashtirilgan tizimlar, mashinali o'qitish, neyron tarmoqlar, Big Data, kiberxavfsizlik, raqamli iqtisodiyot.

Аннотация

В данной статье рассматриваются теоретические и практические аспекты использования технологий искусственного интеллекта (ИИ) при создании современных автоматизированных

информационных систем (АИС). Анализируется влияние алгоритмов ИИ на скорость обработки данных, точность принятия решений и адаптивные свойства систем.

Ключевые слова. Искусственный интеллект, автоматизированные системы, машинное обучение, нейронные сети, большие данные, кибербезопасность, цифровая экономика.

Today, the rapid digital transformation of the global economy and social spheres is leading to the complexity of information systems. Traditional automated systems are now required not only to work based on given algorithms, but also to be able to adapt to a changing external environment, analyze large volumes of unstructured data and draw independent conclusions. It is at this point that artificial intelligence (AI) technologies are becoming an integral part of AI.

The structural role of AI in AI. When creating automated information systems, AI is making revolutionary changes in the following three main areas: Intelligent data analysis (Data Analytics): Continuous monitoring of data flows within the system and identifying hidden patterns in them. Predictive modeling (Predictive Modeling): Predicting future situations based on past data (for example, assessing credit risk in banking systems). Autonomous management: Optimization of processes and error correction without human intervention.

Application of machine learning and neural networks. Machine Learning algorithms act as the "brain" of the system. In traditional programming, a programmer must write code for each situation, while in AI-based systems, the system learns based on the data provided. Neural networks: Based on the principle of the human brain, they are used to recognize complex images, convert speech to text, and find logical connections in large amounts of digital data.

Adaptive control: AI adapts its interface and functions based on user behavior. For example, in e-government systems, the necessary services are automatically offered to the user based on his needs. The role of AI in ensuring cybersecurity. As information systems become more automated, their susceptibility to cyberattacks also increases. AI technologies take security to a new level: Anomaly detection: The system studies the usual workflow and detects any suspicious activity (for example, an unexpected login attempt or data leak) within seconds. Automatic response: As soon as an attack is detected, the AI system can block the network or filter out dangerous requests, which is faster than the human factor.

Economic efficiency and optimization. The use of artificial intelligence in IT provides the following economic advantages for enterprises and organizations: Reduction of operational costs: By transferring repetitive and tedious tasks (data entry, report preparation) to bots and AI agents, it is possible to save the number of employees and working time. Error minimization: According to statistics, the introduction of AI into IT reduces financial losses due to human error by 40-60%.

Development prospects for AI-based IT. In the future, automated information systems are expected to reach the level of "strong artificial intelligence" (Strong AI). This means that systems can perform not only a narrow range of tasks, but also become equal to humans in making creative and strategic decisions. The main promising areas are: Integration with quantum computing technologies: This will allow for a million-fold increase in the computing speed of AI algorithms. Cloud AI platforms: Small and medium-sized enterprises will also have the opportunity to use intelligent systems via the cloud

without expensive servers. Edge AI: The technology of processing data on the device itself (for example, in a sensor or camera) is developing, without sending it to a central server.

Problems and obstacles. No matter how attractive the technology is, the following problems remain when implementing it: Ethical issues: Who is responsible for the decisions made by the system (for example, in medical diagnostics or autopilot systems). Staff shortage: The demand for highly qualified specialists who can manage AI and AAT is much higher than the supply. Data quality: If the data provided to the system for training is incorrect, the AI will draw incorrect conclusions.

In conclusion, the use of artificial intelligence in the creation of automated information systems is not just a trend, but a necessity of the times. AI makes systems smarter, faster and safer. In the conditions of Uzbekistan, the introduction of AI technologies into various sectors of the economy is a key factor in increasing the competitiveness of national products and optimizing public administration.

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