

CREATING STANDARDISED APPROACHES TO THE APPLICATION OF ARTIFICIAL INTELLIGENCE

¹Marysheva L.T.,

*¹Doctor of Technical Sciences Assoc. Tashkent University of Information
Technologies Muhammad al-Khwarizmi,*

²Latipova N.Kh.,

*²associate professor Tashkent University of Information Technologies Muhammad
al-Khwarizmi*

Abstract - This article examines the potential of artificial intelligence in the field of standardization, as well as the importance of using AI in normative documentation to improve efficiency, automation and autonomy in various sectors of standardization. It also explains the use of artificial intelligence in the field of computer science and information technology.

Keywords: artificial intelligence, standardization, system security and efficiency, quality, big data analysis.

INTRODUCTION

In this article, we look at how artificial intelligence is transforming information technology, its key applications, and the opportunities and challenges it brings.

The field of computer science and information technology is undergoing rapid changes due to the introduction of artificial intelligence (AI). AI technologies are becoming an integral part of various processes - from data processing to software development.

METHODS

Artificial Intelligence (AI) has emerged as a transformative force across various sectors, including healthcare, finance, education, and transportation. As organizations increasingly integrate AI into their operations, the need for standardized approaches becomes paramount. Standardization can ensure consistency, reliability, and ethical practices, helping to mitigate risks while maximizing the benefits of AI technologies. This article explores the importance of creating standardized approaches to the application of AI, the key challenges involved, and potential pathways to achieve this goal.

Artificial intelligence (AI) is becoming an increasingly important part of industry and everyday life, impacting many sectors. One area where AI can bring greater efficiency and innovation is standardization. In this analysis, we look at the opportunities that AI brings to the standardization process, as well as the challenges that organizations face in this context.

Intelligent AI systems aim to improve efficiency, automation, and autonomy in a variety of fields, such as medicine, finance, manufacturing, transportation, education, and many others. AI also aims to create systems that can learn from experience and improve on their own over time.

The ultimate goal of AI is to help people solve complex problems, automate routine tasks, and create more intelligent and efficient systems to improve our lives and society as a whole.

The main goal of artificial intelligence is to replicate the intellectual functions that are commonly associated with human thought, such as learning, reasoning, perception, language understanding, and decision making. Artificial intelligence aims to create computer systems that can perform actions and solve problems similar to those solved by humans, using algorithms and models that can process and analyze large amounts of data.

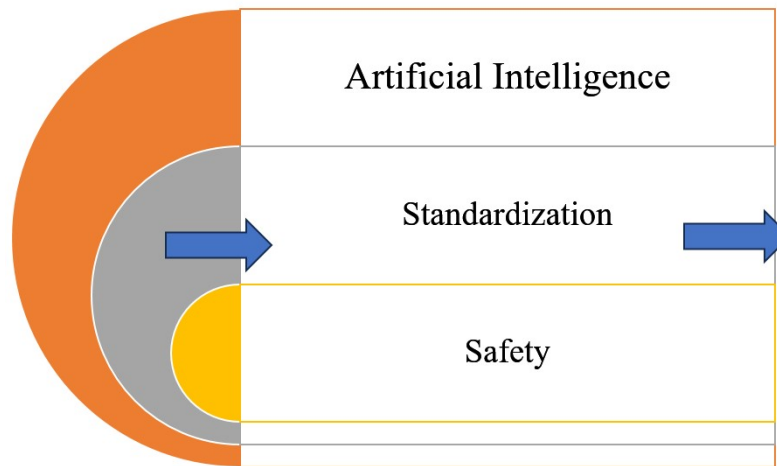


Fig.1.Schemeartificial intelligence in standardization.

RESULTS

Artificial intelligence has many applications in various fields, including autonomous navigation, medical diagnostics, financial analysis, software development, and more. In addition, artificial intelligence can greatly help in solving complex problems that require significant computing resources or involve analyzing huge amounts of data.

This can be achieved by developing and applying various methods and technologies, such as machine learning, neural networks, deep learning, and expert systems. Using these approaches, artificial intelligence can extract value from large amounts of data and make decisions based on the patterns it identifies.

The main goal of artificial intelligence is to create an intelligent system capable of solving complex problems, analyzing and interpreting information, and adapting to new situations.

The user must be protected from insecure or ineffective systems. Automated systems must be developed through consultation with various communities, stakeholders, and subject matter experts to identify issues, risks, and potential impacts of the system. Systems must be tested before deployment to identify and mitigate risks, and continuously monitored to demonstrate their safety and effectiveness.

The user should not face discrimination from algorithms, and systems must be used and designed in an equitable manner. Depending on the specific circumstances, algorithmic discrimination may violate legal protections. Designers, developers, and implementers of automated systems must take proactive and consistent steps to protect individuals and communities from algorithmic discrimination and to use and design systems in an equitable manner.

The user must be protected from misuse of data by built-in security measures and have the right to control how data about him or her is used. Designers, developers and implementers of automated systems must seek the user's permission and respect his or her decisions regarding the collection, use, access, sharing and deletion of his or her data in appropriate ways and to the greatest extent possible; if this is not possible, alternative privacy protections based on design should be used.

The user must be aware that an automated system is being used and understand how and why it contributes to the results that affect them. Designers, developers, and implementers of automated systems must provide publicly available documentation in plain language that includes a clear description of the overall operation of the system and the role that automation plays, notice that such systems are being used, the person or organization responsible for the system, and an explanation of the results that is clear, timely, and accessible.

ANALYSIS

The user should be able to opt out of services where necessary and have access to a specialist who can quickly review and resolve any issues that arise. The user should be able to opt out of automated systems in favor of a human alternative where appropriate.

Availability of large amounts of data for training.

Open datasets: There are many open datasets available for training various AI models. For example, MNIST for image processing, IMDB for text analysis, and

others. Using open datasets allows researchers and developers to experiment and learn from a variety of data.

Data exchange systems: There are data sharing platforms and systems where companies and organizations can share their data for research and development, such as Kaggle, Google Dataset Search, AWS Public Datasets, and other platforms.

The organization's own data: Many companies have huge amounts of data that can be used to train AI models. It is important to ensure the security and privacy of the data when using it.

Generating synthetic data: In cases where real data is unavailable or limited, synthetic data generation can be used to train models. This can be useful for expanding the dataset or creating data for specific situations.

Specialized databases: Some industries have specialized databases that can provide additional training data, such as medical databases, financial data, geodata, and others.

Crowdsourcing: Crowdsourcing can be used to collect data, which allows a large number of people to create or label data.

Competitive advantages of AI. More and more companies are learning about the competitive advantages of AI for business and making the implementation of this technology their priority. For example, specialized AI recommendations help make more informed decisions faster. AI also offers many tools and opportunities to reduce costs and risks, speed up the time to market, etc.

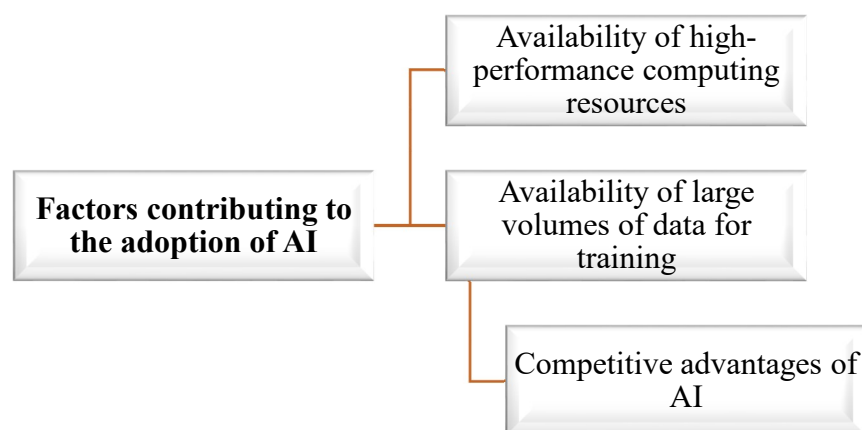


Fig. 2. Competitive advantages of AI.

Artificial intelligence (AI) has the potential to change approaches to standardization and regulations, offering new opportunities and challenges. Here are some ways AI can influence standardization:

Automation of standardization processes: AI can be used to automate standardization processes, facilitating data collection and analysis, development of standards and procedures, and enforcement of their implementation.

Big Data Analysis: AI makes it possible to analyze large amounts of data and identify trends, which can help organizations and standards committees make more informed decisions and update standards as needed.

Improving the accuracy and reliability of standards: Using AI in the standards creation process can help improve their accuracy by processing more data and better predicting potential problems.

Personalized solutions: AI can help create personalized standards and regulations based on the specific needs and characteristics of an organization.

Responding to changes: AI can help respond more quickly and accurately to changes in technology, legislation or market demands, allowing standards to be more relevant and compliant with modern requirements.

The Importance of Standardization in AI

1. Consistency and Reliability. One of the primary benefits of standardization is the establishment of consistent methodologies. Standardized processes for developing and deploying AI models can enhance reliability, making it easier for organizations to replicate successful outcomes. For instance, clearly defined protocols for data collection, model training, and validation can lead to improved accuracy and performance of AI systems.

2. Ethical Considerations. AI applications can inadvertently perpetuate biases and lead to ethical dilemmas, especially when they are applied in sensitive domains like criminal justice or hiring processes. Standardizing ethical guidelines can help ensure that AI systems are developed and deployed responsibly. This can involve

creating frameworks to evaluate fairness, accountability, and transparency, guiding organizations to make ethically sound decisions in AI implementation.

3. Regulatory Compliance. As governments and regulatory bodies around the world begin to establish AI-related policies, the need for standardized practices becomes even more critical. Organizations must comply with these regulations to avoid legal repercussions and promote public trust. Standardization can facilitate compliance by providing clear guidelines and checklists that organizations can follow to meet regulatory requirements.

4. Interoperability. In an increasingly interconnected world, the ability for different AI systems to communicate and work together is vital. Standardizing protocols and frameworks can improve interoperability, allowing systems developed by different organizations to integrate seamlessly. This can open up possibilities for collaborative AI solutions that leverage multiple platforms and data sources.

5. Scalability. Standardized approaches can pave the way for scalability. When processes are well-defined, organizations can more easily scale their AI initiatives, deploying them across different units or geographical locations without reinventing the wheel. This is particularly important for businesses looking to expand their AI capabilities rapidly.

Key Challenges to Standardization

Despite the apparent benefits, several challenges hinder the creation of standardized approaches to AI:

1. Rapid Technological Advancements. The AI field is evolving at an unprecedented pace. New algorithms, techniques, and applications are continually emerging, making it challenging to establish standards that remain relevant over time.

2. Diverse Use Cases. AI's applicability spans various industries and domains, each with its unique requirements and challenges. Creating a one-size-fits-all standard may be impractical; thus, it is essential to develop flexible standards that can accommodate different contexts.

3. Lack of Consensus. Stakeholders in the AI landscape, including researchers, industry leaders, and policymakers, may have differing priorities and philosophies regarding the standardization of AI. Achieving consensus across such a diverse group can be a significant hurdle.

4. Resource Constraints. Developing and implementing standardized approaches requires time, expertise, and financial resources. Smaller organizations or those with limited access to AI expertise may find it particularly challenging to engage with standardization efforts.

Pathways to Achieve Standardization

DISCUSSION

To overcome these challenges, several strategies can be employed:

1. Collaborative Initiatives. Industry-wide collaborations can facilitate the creation of standardized approaches. Organizations, academic institutions, and regulatory bodies can come together to share insights and develop best practices. Initiatives like the Partnership on AI and the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems are good examples of collaborative efforts aimed at establishing guidelines for responsible AI use.

2. Flexible Standards Development. Instead of rigid standards, a more adaptable framework that can evolve with advancements in technology is necessary. This may involve establishing core principles that can be tailored to specific use cases, allowing organizations the flexibility to innovate while still adhering to essential guidelines.

3. Continuous Education and Awareness Programs. Raising awareness about the importance of standardization and providing educational resources can equip organizations with the knowledge needed to adopt standardized practices confidently. Workshops, certifications, and training programs can help disseminate information about best practices and ethical considerations in AI.

4. Investing in Research and Development. Funding research efforts focused on standardization can yield significant dividends. By investing in studies that identify best practices and evaluate the effectiveness of different approaches, organizations can build a solid foundation for creating standards in AI.

However, the implementation and use of AI in standardization also comes with a number of challenges, including the need to ensure machine understanding of standards, data protection, and transparency of decisions.

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