

USE OF ROBOTICS IN CONSTRUCTION

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Анотація

У цьому дослідженні представлено огляд програмування в галузі комп'ютерно-інтегрованих технологій та робототехніки, з акцентом на ключові методології та технології, що сприяють автоматизації та оптимізації. Розглядаються розробка систем керування, інтеграція штучного інтелекту, обробка великих даних, кібербезпека та автономні системи. Також обговорюються перспективи, виклики та можливості в цій галузі, разом з аналізом практичних застосувань робототехніки.

Ключові слова: програмування, робототехніка, автоматизація, штучний інтелект, технології.

Abstract

This study offers a broad look at programming in computer-integrated technologies and robotics, reviewing critical methodologies and technologies that support automation and optimization. It examines control system development, AI, big data, security, and autonomous systems. The paper also discusses future trends, obstacles, and opportunities, accompanied by an analysis of practical robotics applications.

Keywords: programming, robotics, automation, artificial intelligence, technologies.

Introduction

The development of computer-integrated technologies and robotics programming has significantly influenced various industries. Today, robotic systems are widely used in production, healthcare, logistics, and even household applications. The rapid evolution of artificial intelligence, the Internet of Things (IoT), and cloud computing has further accelerated the advancement of robotics.

The process of developing robotic systems requires several key steps: defining the system's purpose, designing software and control algorithms, integrating sensors and actuators, and ensuring cybersecurity. The ability to create adaptive and autonomous robotic solutions has become a crucial aspect of modern technology.

Research results

The research demonstrates that programming plays a critical role in the advancement of robotics and automation. Large corporations such as Tesla, Boston Dynamics, and Siemens heavily invest in robotics, developing intelligent machines capable of complex operations. AI-driven robots are now capable of performing tasks ranging from warehouse automation to surgical procedures.

Key benefits of robotics programming include:

- increased productivity and efficiency,
- reduction of human errors,
- cost savings in production,
- enhanced safety in hazardous environments,
- improved scalability of automated processes,
- greater precision and accuracy in manufacturing,
- accelerated innovation through AI-driven automation,
- enhanced adaptability of robotic systems to changing environments.

Furthermore, artificial intelligence enables robots to learn and adapt to dynamic conditions, significantly improving their functionality. For instance, self-driving cars use AI-based algorithms to analyse traffic situations and make real-time decisions.

Ukraine is also making progress in this field. Companies like Deus Robotics and Infocom Ltd. actively develop robotic solutions for logistics, industry, and agriculture, integrating AI-powered automation into their products.

Additional research shows that integrating cloud computing in robotics allows for better data processing and real-time decision-making. Moreover, the implementation of blockchain technology enhances security in autonomous robotic systems, ensuring data integrity and transparency.

Conclusion

The programming of computer-integrated technologies and robotics is a key driver of future innovation. With ongoing advancements in artificial intelligence, cybersecurity, and IoT, robotics will continue to transform various industries, improving efficiency and safety. Future research and investment in this field will unlock new possibilities for intelligent automation, making it an essential part of technological progress.

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