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PEDAGOGY AND PSYCHOLOGY

PROSPECTS OF THE MECHATRONICS INDUSTRY: TECHNOLOGIES FUTURE

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The mechatronics industry continues to evolve rapidly, introducing new technologies and innovations. In the near future, we can expect the emergence of several key technologies that will change the way mechatronic systems are designed, manufactured and operated. Here are some of them:

1. Robotic systems with adaptive control – robots with integrated machine learning algorithms will be able to adapt to changing environmental conditions and perform complex tasks. This will allow robots to be used in more dynamic areas such as medicine, agronomy and industry, where they will be able to independently adjust their actions.

2. Mechatronic systems using the Internet of Things (IoT) – integrating mechatronic systems with the IoT will allow them to collect and analyze data in real time, which will increase their efficiency. Systems will be able to automatically respond to changes, reducing risks and increasing efficiency in areas such as industry, logistics and energy.

3. Artificial Intelligence (AI) Systems – Using AI to control mechatronic systems will enable the implementation of complex control and optimization algorithms. AI's ability to analyze large amounts of data and make decisions in real time will open up new opportunities for process automation and optimization.

4. Next-generation sensor technologies – The development of new sensors, such as microsensors and biosensors, will allow for detailed data on the environment. This will lead to improved quality and safety control in production, as well as the development of new medical technologies.

5. Cognitive control systems – these systems will be able not only to analyze data, but also to make complex decisions based on previously acquired knowledge. Cognitive systems can become the basis for autonomous vehicles and robotic platforms operating in real time.

6. Mobile robotic platforms – further development of mobile robots that can move independently in difficult conditions. Use in logistics, healthcare, and delivery services, which will reduce costs and increase efficiency.

7. Augmented and Virtual Reality (AR/VR) – integration of AR and VR into the training and design of mechatronic systems. This will allow specialists to model systems in an interactive environment, which will improve the quality of training and design.

Thus, the mechatronics industry has enormous potential for development due to the latest technologies that may appear in the near future. From adaptive robots to

intelligent control systems, these innovations promise to increase efficiency, safety, and productivity in various areas. The use of artificial intelligence, IoT, and the latest sensor technologies is shaping a new era in mechatronics, which opens up numerous opportunities for specialists and enterprises.

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