

## **СЕКЦІЯ 4. ФУНДАМЕНТАЛЬНІ ТА ПРИКЛАДНІ ПРОБЛЕМИ ТРАНСПОРТНОГО МАШИНОБУДУВАННЯ**

### **ROBOTICS AND AI: OVERVIEW AND PROSPECTS**

**Konovalenko O.E.<sup>1</sup>, Brusentsev V.A.<sup>2</sup>**

*<sup>1</sup>National Technical University*

*«Kharkiv Polytechnic Institute»,*

*<sup>2</sup>Kharkiv State Academy of Culture,  
Kharkiv*

Robots today have entered our lives in different areas. They fly into space, help with military purposes, build cars, are used in industry, and help find new medicines. Robots are used in a variety of fields.

The versatility of robots implies the ability to perform targeted actions that require certain intellectual abilities. Robots have no less broad prospects in the mining industry, metallurgy and the oil industry (maintenance of drilling rigs, installation and repair work), in construction (installation, finishing, medical work), light, food, and fishing industries. Along with the use in industry, robots are also used in other areas of the national economy and human activity, allowing people to free people from hard, dangerous and monotonous work.

The first place in the world in the production and use of robots is confidently occupied by Japan, where most of the world's fleet of robots is concentrated. This is followed by the USA, Italy, France, Sweden and Germany. Most of this park is used by industry. The leaders in the production of robots at the moment are the companies FANUC Robotics (Japan), KUKA (Germany) and ABB (Sweden, Switzerland) and others. In total, there are about 400 robotics companies operating on the world market.

The appearance of the first robots gave a powerful impetus to the development of such areas as machine vision and image recognition, the construction of methods for modeling the states of the world, the construction of plans for a sequence of actions and management of the implementation of these plans, and the control of the work of robots in three-dimensional space. The intelligence of robots is constantly improving with the creation of better human-machine interfaces. The range of their application is significantly expanding.

Deep learning has given machines the ability to recognize patterns and patterns at a new level, but this needs to be coupled with simulated reasoning to create adaptable robots that can learn "on the fly".

The key to this will be to create an AI that is aware of its own limitations and can be trained to learn new things. It is also important to create systems that can learn quickly from limited data, rather than from the millions of examples used in deep learning. Further advances in our understanding of human intelligence will also be needed to address these challenges.

Promising technologies of artificial intelligence in robotics, which have a large number of modern problems, are the following: computer vision, natural language processing, speech analytics, decision-making, recommendation systems.