

## **DEVELOPMENT OF MECHATRONICS AND ROBOTICS IN QATAR**

**Elsayed Fathy Mohamed Reda Ahmed, Chmykhova O.**

*National Technical University «Kharkiv Polytechnic Institute», Kharkiv*

Mechatronics and robotics are among the most promising fields in modern science and engineering. Their development is of particular importance in countries with rapid economic growth and technological modernization, such as Qatar. In recent years, the country has made significant progress in implementing innovative technologies, especially within the framework of the Qatar National Vision 2030, which aims to transform Qatar into a knowledge-based and innovation-driven society [1].

Qatar is actively developing its research infrastructure in mechatronics and robotics. One of the leading drivers in this field is the Qatar Foundation, which supports high-tech projects and promotes interdisciplinary research. Major contributions are also made by universities such as Hamad Bin Khalifa University and Texas A&M University at Qatar, where modern laboratories and academic programs in mechatronics, artificial intelligence, robotics, and cyber-physical systems have been established [2].

On a practical level, Qatar is successfully implementing robotic technologies in various sectors, including healthcare (surgical robots and automated diagnostic systems), services (service robots in airports and hotels), construction (3D printing of structures), education (STEM programs for youth), and security (patrolling robots and unmanned monitoring systems).

One of the notable examples is the robotic disinfection and delivery system developed at Qatar University during the COVID-19 pandemic. This multifunctional robot was designed to reduce physical contact and ensure safety in medical environments. It could deliver food and medicines and disinfect spaces using UV light and chemical sprays. Created from locally available components, the robot exemplified efficient and cost-effective engineering solutions [3].

It is also worth noting the growing interest of students from Qatar and other Arab countries in studying at Ukrainian technical universities. Fields such as automation, mechatronics, information technology, and artificial intelligence are in high demand. This educational cooperation strengthens international relations, promotes cultural exchange, and contributes to the global development of engineering sciences.

In conclusion, Qatar demonstrates significant progress in the field of mechatronics and robotics by combining scientific research, educational development, and strategic vision. Its experience can be valuable for countries like Ukraine that are also striving for technological innovation.

### **References**

1. Qatar National Vision 2030. State of Qatar, 2008.
2. Hamad Bin Khalifa University. "Mechatronics and Robotics Research in Qatar." Hamad Bin Khalifa University Press, 2023.
3. Gulf Times. "Robotic Disinfection and Delivery System, Qatar University." Gulf Times, 2020.