



SEPTEMBER, 2023

CHICAGO, USA

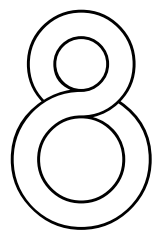
# **SECTORAL RESEARCH XXI: CHARACTERISTICS AND FEATURES**

IV INTERNATIONAL SCIENTIFIC AND THEORETICAL CONFERENCE



**EUROPEAN  
SCIENTIFIC  
PLATFORM**





September, 2023

Chicago, USA

**SECTORAL RESEARCH XXI:  
CHARACTERISTICS AND FEATURES**  
VI International Scientific and Theoretical Conference

Chicago, 2023



*Chairman of the Organizing Committee: Holdenblat M.*

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S 43 **Sectoral research XXI: characteristics and features:** collection of scientific papers «SCIENTIA» with Proceedings of the VI International Scientific and Theoretical Conference, September 8, 2023. Chicago, USA: European Scientific Platform.

ISBN 979-8-88955-767-8

DOI 10.36074/scientia-08.09.2023

Papers of participants of the VI International Multidisciplinary Scientific and Theoretical Conference «Sectoral research XXI: characteristics and features», held on February 8, 2023 in Chicago are presented in the collection of scientific papers.



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UDC 001 (08)

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ISBN 979-8-88955-767-8

## SECTION 14.

### AUTOMATION AND APPLIANCES MAKING

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## COMPARATIVE ANALYSIS OF THE CHARACTERISTICS OF MOBILE ROBOTS AND COLLABORATION ROBOTS WITHIN INDUSTRY 5.0.

Collaborative robots are robots that can work side by side with human operators. According to the ISO 10218-2 standard, a “cobot” is “a robot designed to interact directly with a human within a defined collaborative workspace” [1]. Cobot applications have proven that it is important to define the boundaries of the collaborative workspace, which is the designated space for human-robot interaction (HRI) [2]. At this point in time in industry, the human operator and cobot coexist in the same place, but perform separate or sequential operations. Cobots are designed to stop before any inadvertent human contact on command can cause harm. In addition, cobots should be light in order to reduce their inertia and enable sudden stops [3]. Let's compare in Table 1 the main characteristics of the workspace when using classical mobile robots and collaborative robots within Industry 5.0.

*Table 1*

**Comparison of the main characteristics of the workspace of mobile robots and collaborative robots**

Characteristics	Mobile robots	Collaborative robot
Role	Replacing a person	Help man
Human cooperation	An encoding used to indicate movements, positions, and grips.	Recognizes gestures and voice commands and predicts operator movements.
Working space	Workplaces of robots and operators are usually fenced	Shared Workstation Without Fencing
reprogramming	Rarely required	Required often
Mobility	Fast moves	Slow movements
Payload Handling	Capable of carrying large payloads	Cannot handle large payloads
Ability to work in a dynamic environment	Limited	Allows

Within Industry 5.0, which emphasizes interaction between humans and robots in the production environment, collaborative robots (cobots) can provide a number of advantages over mobile robots [4-8]:

Helping Humans: One of the key tenets of Industry 5.0 is the focus on human-robot interaction in working together. Collaborative robots are specifically designed to cooperate with humans, enabling safe and efficient interaction;

- gesture recognition and voice commands: Cobots have the ability to recognize gestures and voice commands, which makes interaction with operators more intuitive and natural;
- security: Collaborative robots are equipped with security sensors that allow them to detect the presence of a person nearby and stop dangerous actions. This makes them safer to work in the presence of people without the need for guardrails;
- easy reprogramming: Cobots usually have intuitive programming interfaces that make it easy to reconfigure and reprogram for different tasks;
- work in a dynamic environment: Collaborative robots can work effectively in dynamic environments where unforeseen situations or changes in production processes may occur;
- improved work processes: Cobots can be used to automate monotonous, routine and physically demanding tasks, freeing the person for more creative and intellectual work;
- flexibility in the workspace: No need for guardrails makes it easier to integrate collaborative robots into a variety of work environments.

In general, collaborative robots stand out for their ability to focus on human collaboration, providing safety and flexibility in a variety of production scenarios, making them an excellent choice for Industry 5.0 [9-12].

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