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Robot Ergonomics: Giving the Behavioral Objects a dynamic presence

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Abstract:

The problem of research is how humans perceive interactive future products and robots directly as new behavioral objects, and how to address the shortcomings in the design of robotic systems and their identification on specific tasks; With the increase in technological complexity in the current era, it has become necessary for the designer to set clear standards for designing a special lexicon for communication between the human element and robotic systems within interactive work environments, starting from full awareness of them - physical presence - within the real work environment, and even direct interaction with them - dynamic presence – In a way that seems logical, and how humans respond to interacting with these innovative products, to reduce workload, make the right decisions, predict the behavior of the corresponding entity, and improve the quality of interaction experiences in general.

Objectives

The research aims to discuss the considerations of modern Ergonomics sciences in how robotic systems exist within work environments in terms of dynamic presence in contrast to any of the elements of the traditional work environment, and this would enhance the user's interactive capabilities and develop his skill performance within the work environment, by directing cognitive processes and behavior Humanity towards acquiring a new interactive approach through which it is possible to study the different dimensions of the context of physical and cognitive interactions.

Significance

Consolidating the concept of the dynamic presence of robotic products and systems, as they are modern engineering innovations that contain future knowledge and advanced technologies, which distinguish them from traditional engineering products, as well as laying new foundations for the design and development of robotic products, to study a new aesthetic aspect of the concept of interaction between humans and machines with a dynamic presence.

Methodology

The research relied on the inductive approach

Results

By identifying the latest developments in Ergonomics, the designer can enhance the capabilities associated with the design of robotic systems as new behavioral products, through the determinants of Operational Space formulation, to establish the reality of the dynamic presence of robotic products and systems.

Improving the procedures for interacting with the robot product within the interaction environments, considering design elements such as: the Forming of Realism, Physical Presence, Behavioral Expectations, Shape Patterns, Visual Appearances, and Time Management, which in turn interact and affect the human component of the system, in order to conduct intuitive interactions for a good and more realistic experience.

Keywords:

Ergonomics, Interaction Design, Presence, HRI , Robot Ergonomics, Operational Space formulation

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