Virtual prototyping and its role in product design process

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Abstract:

At present, speed is a key factor in the design and development of industrial products, And In the light of modern technology, computer-based prototyping techniques have emerged in so-called advanced rapid prototyping as a solution to the modeling activity associated with design processes. But these technologies have disadvantages, such as the high cost of the models and the long time it takes for these models to be completed, The subject of the research came to the virtual prototyping as a modern technology through which the models associated with the design activity of industrial products, These models provide the speed required in light of the continuous evolution and changing requirements of the market, and also provide a low-cost solution suitable for adoption by major companies or small and medium-sized enterprises alike. The importance of these virtual models is evident when it comes to communicating as much information about design as possible with the simplest way and the lowest costs, Through these models can include everything related to the product of work theories and engineering drawings and three-dimensional models with physical properties that mimic the final product, Within the same application and this information induced by one of the images prepared on the computer programs, and thus we can share these models over the Internet and work on them remotely, which in turn contributes to shorten the time of the design process.

The importance of research is to shed light on the role of virtual prototyping as one of the basic elements in the process of design and development of industrial products, as the research aims to activate the role of virtual modeling in the process of product design and development and to include them in the design process as one of the basic stages' because of its usefulness, The hypothesis is that if virtual prototyping techniques and new technologies can be utilized in the process of designing industrial products in a creative manner, this ensures that the cost of model design and testing processes is reduced, as well as the opportunity to develop products periodically without incurring many expenses related to the production of physical models. The deductive approach was used to achieve this.

Keywords:

Virtual Prototyping, Products Design, Virtual Reality, Augmented Reality, Mixed Reality.

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