ASPECTS OF COMPUTER MODELING

Shonazarov Durbek Zulfiqor o'g'li
5th school student, Karshi district

Abstract . *This article examines the effectiveness of machine learning through simulation.*
Key words: *model, simulation, project, competence, activity, specialist.*

Computer modeling is an effective way to study the phenomena of the surrounding reality. "This is a scientific experiment that consists in repeating the studied natural phenomenon under controlled conditions. In this case, the studied object is replaced by a computer model and its behavior is studied under various external influences. Wide spread of personal computers, information technologies, creation of powerful supercomputers made computer modeling one of the effective methods of studying physical, technical, biological, economic and other systems" [1].

According to R.P. Fedorenko, "computer models are easier and more convenient to study, they allow conducting computational experiments that are difficult to correct or give unpredictable results. The logic and formality of computer models allow to determine the main factors determining the characteristics of the studied objects, to check the response of the physical system to changes in its parameters and initial conditions" [2].

"Computer modeling requires abstracting from the specific nature of phenomena, building first a qualitative and then a quantitative model. After that, a series of computer experiments, interpretation of the results, comparison of modeling results with the behavior of the studied object, further improvement of the model, etc. are considered. Computational experiment is actually an experiment carried out with the help of a computer according to the mathematical model of the studied object" [1]. This is often cheaper and more convenient than a full-scale experiment. Its implementation requires less time, provides more detailed information about the quantities describing the state of the system [2].

The essence of computer modeling of the system is to create a computer program (software package) that describes its behavior during its operation, taking into account the interaction of the studied system elements with each other and with the environment. Carrying out a series of computational experiments on a computer is carried out to study the nature and behavior of this object, to optimize it and to predict new phenomena [1].

It is desirable that the studied system model in computer modeling meets a number of requirements:

1. Completeness of the model, that is, the ability to calculate all the properties of the system with the required accuracy and reliability.

2. The flexibility of the model, which allows to repeat and use different situations and processes, to change the structure, algorithms and parameters of the studied system.

3. Development and implementation period describing the time spent on creating the model.

4. A block structure that allows adding, removing and replacing some parts (blocks) of the model [2].

In addition, information support, software and hardware must allow the model to exchange information with the relevant database and ensure the efficient execution of the machine and user-friendly operation.

"The main stages of computer modeling are expressed in the following:

1) setting the problem, describing the studied system and identifying its components and elementary acts of interaction;

2) formalization, that is, creating a mathematical model that is a system of equations and reflects the essence of the object being studied;

3) development of an algorithm, its implementation solves the problem;

4) write a program in a specific programming language;

5) planning and execution of calculations on a computer, completing the program and obtaining results;

6) analysis and interpretation of results, comparing them with empirical data. All this process is repeated at the next stage" [1]. The development of a computer model of an object consists of a sequence of operations: first, based on the available information about the system S, a model is created, a number of computational experiments are conducted, and the results are analyzed. When new information about the object S is obtained, additional factors are taken into account, the behavior of the model is studied on the computer until a model is obtained that matches the system S with the required accuracy. After that, models are created and offered.

REFERENCES:

1. Markayev X.A. Foreign experiences and analysis of computer modeling training. American Journal of Pedagogical and Educational Research is an peer reviewed International, open access journal. ISSN (E): 2832-9791| Volume 13, | June, 2023. - R. 145-249.

2. Markayev K.A. Experimental approach as a factor in teaching students computer modeling. International Conference on Agricultural Sciences, Environment, Urban and Rural Development (Morocco). 2023.-B.37-39.