

A Overview on Soft Computing and its Applications

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Commentary Article

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DESCRIPTION

Soft computing can be thought of as a hybrid of computer science and mathematics. It assists in the handling of real-life circumstances. The many components of soft computing are essential in the development of automatic expert systems. These systems are capable of completing challenging tasks without the assistance of humans. Soft computing approaches are used to educate these systems.

The following are some of the components of soft computing:

1. Fuzzy Logic-This is a type of multi-valued logic that deals with approximate reasoning instead of assigning constant values of 0 or 1. It gives the parameters a membership value in the range.
2. Evolutionary Computing-This is a branch of Artificial Intelligence that is used to problem-solving systems and relies heavily on computational models. It entails a slew of optimization issues.
3. Machine Learning-It employs learning algorithms to tackle a specific problem with more precision and to improve the performance of any given work.

4. Probabilistic Reasoning-It introduced the theory of probability to deal with uncertainty in knowledge. Soft computing can be used to solve real-world problems that need approximation, imprecision, and uncertainty. It has greater benefits than traditional computer approaches. These innovative methods can be used to a variety of fields, including medical, education, and engineering. This study focuses on several soft computing approaches and their application areas.

Nowadays, robots are utilized to automate tasks, and diverse soft computing approaches such as fuzzy logic and expert system techniques are used to do this. Ecommerce companies utilize robots to manage their inventory. It's also employed in the manufacturing and inventory management industries.

Data mining is the method of obtaining relevant information from a database and using that knowledge to make informed business decisions. This procedure makes use of Artificial Intelligence (AI) and other machine learning algorithms, resulting in an increase in profit for any business.

For traffic prediction, direction, and debugging, the transport sector employs soft computing approaches at various phases, including AI, expert systems, machine learning, and evolutionary computing.

Healthcare is a highly specialized sector in which professionals must make vital judgments in order to save people's life. Soft computing approaches are utilized to accurately diagnose patients early on, as well as treat and monitor them.

In the general education curriculum, soft computing approaches are employed to improve children's educational attainment. The use of NN and fuzzy logic can aid in the assessment of a student's grades in various courses. Students' learning styles can be detected using a Bayesian network. This allows teachers to predict a student's GPA and take practical steps to improve the number.

To minimize crime rates, machine learning techniques can be utilized. Machine learning aids in the analysis of crime data and the prediction of the types of crimes that may occur in the future at a certain place. As a result, machine learning and data mining aid in the reduction of crime rates in society.

Soft computing approaches are used in a variety of fields to assist people in making well-informed decisions swiftly and conveniently. They are utilized to use complicated algorithms to make the systems smarter. As explained in the study, these strategies can be applied to practically any field. Their popularity is rapidly increasing, and their impact will be felt in the future years.