

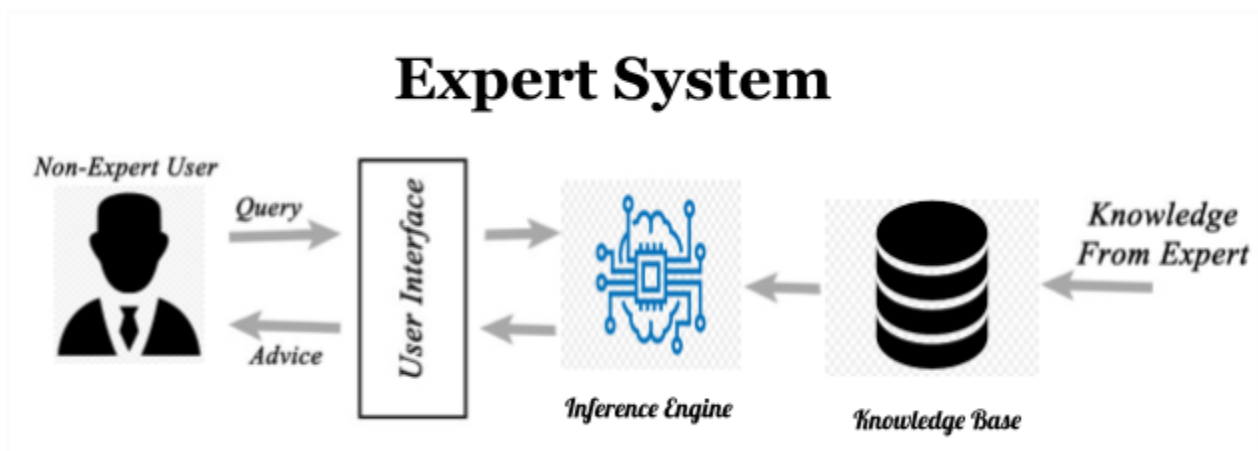
Genetic Algorithm vs Expert System

While expert systems and conventional operations research techniques are effective for a wide range of problems, other tasks and complex real-world problems are impossible or at least difficult to address with these technologies. For example, applications involving scheduling and resource planning continue to be challenging subjects of research and development. Generic methods are sought that can be applied easily to practical problems. Genetic algorithms are receiving considerable attention and are proving to be important in practice. However, the addition of domain knowledge through heuristic rules can have a positive effect on the performance of genetic algorithm solutions.

Expert systems:

Expert systems are a clever way to capture tacit information on a specific and limited domain of human expertise. These programs capture the knowledge of skilled employees in the form of specific rules in a software system that can be used by others in the organization. A set of rules in an expert system adds to the company's memory, or stored readings.

Expert systems lack the breadth of knowledge and understanding of the basic principles of the human expert. They usually do very limited work that can be done by a professional in a matter of minutes or hours, such as identifying a faulty machine or deciding whether to grant a loan. Problems that cannot be solved by human experts in the same short term are too difficult for a professional program. However, by capturing personal expertise in limited areas, expert programs can provide benefits, helping organizations make better decisions with fewer people. Today expert systems are widely used in business in a variety of contexts, with good decision-making potential.



Genetic algorithms:

Genetic algorithms are used to find the right solution for a particular problem by examining the largest number of possible solutions for that problem. Their problem-solving approaches are based on the way in which living things adapt to their environment - the process of evolution. They are designed to work the way people solve problems — by modifying and rearranging their parts using processes such as reproduction, genetic engineering, and natural selection.

Therefore, genetic algorithms promote the emergence of solutions to specific problems, control of performance, diversity, adaptability, and selection of possible solutions using genetic processes. As the solutions evolve and combine, the worst ones are discarded and the best survive in order to continue to produce the best solutions. Genetic algorithms create problem-solving programs even if no one can fully understand their structure. The genetic algorithm works by representing information as a unit of 0s and 1s. The solution that can be indicated is a long string of these numbers. The genetic algorithm provides ways to search for all possible digital combinations to identify the appropriate thread representing the best problem structure.

