

## Expert System in Future

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**Abstract:** Artificial Intelligence is a software or machine that can think and understand complex problems. And Expert System is uses artificial intelligence technology or methodology to solve problems within a specialized domain that requires human expertise. Expert system uses human knowledge to solve the complex problems in various areas as science, engineering, business, medicine, weather forecasting and the organizations employing the technology of expert system has seen an increase in the quality and efficiency. Expert system is a computer software that emulates the decision making ability of a human expert. The expert system represents knowledge acquired from human expert as data or rules within the compute.

**Keywords:** Expert System, Working, Future Impacts, Intelligence, Fuzzy Logic.

### I. INTRODUCTION

Expert system (ES) has various advantages over the human expert as expert system is affordable, permanent, consistent, fast processing and quick replication whereas human expert is perishable, unpredictable, and expensive and has slow processing and reproduction. Expert systems are computer software programs that store knowledge in the form of data and rules from human experts.

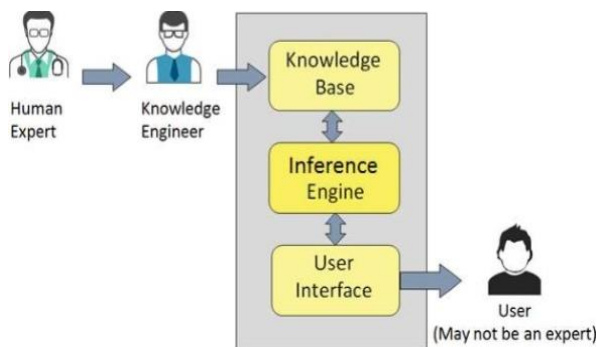


Fig. 1. Expert System

#### A. Expert System:

Nowadays use of Expert System is increasing rapidly, which is having a large impact on various field of life. Expert System is an application of artificial intelligence. It is designed to solve real problem. Expert system plays an important role in medicin, engineering, transportation, sports, law, forensics, loan analysis, marketing, telecommunications, written communications, customer services, defence, agriculture, etc.

John Durkin "Application of Expert System In Science" says that An expert system is a computer program or a software that captures the knowledge of a human expert on a given problem, and uses this knowledge to solve problems similar to the expert.[4]

Expert System is growing rapidly in today's world. There are many benefit of Expert system like, it does not forget things. It take less time to train as compare to human. It has flexiblity, availability, cheaper, muliple experties, fast response, decrease decision making time, increase process and product quality.

Expert System also has some disadvantages like, it does not able to recognize when no answer is available. There is lack of human common sence, not able to provide a creative response, large expert system are difficult to develop and maintain, not capable of explaining the logic behind a decision,errors may occure in knowledge base, cannot adapt to changing environments.

#### B. Working of Expert System:

Expert System are designed for solve comlex problem of various areas. Expert system does not have human capabilities, it is a knowledge based system. It uses a knowledge base to extract knowledge of a particular situation. In expert system, a user can query through user interface in order to receive expert answer. An inference engine is a program that applies logic rule to extract answer from the knowledge base. Knowledge base is a collection of facts and rules that has stored information from human experts.

Expert System is a knowledge based system in which a user ask the question through user interface and receive the expert answer from knowledge base by the processing of inference engine. Inference system process the query and for extracting the appropriate information that matches the query.

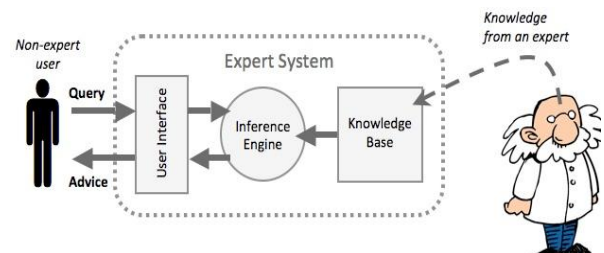


Fig 1.2. Expert System working

### C. Dvelopment of Expert System:

The process of building expert systems is often called knowledge engineering.

Expert system=Knowledge base+ Inference engine knowledge

The knowledge base contains specialized knowledge on a given subject that makes the human a true expert on the subject. This knowledge is obtained from the human expert and encoded in the knowledge base using one of several knowledge representation techniques.

The inference engine is automated reasoning system that evaluates the current knowledge-base and add on the new knowledge to the knowledge-base it is done by applying vafious rules including forwad and backward chaining.

## II. RESEARCH AREA OF EXPERT SYSTEM

- Research Work of ES in Bio-Medical Area
  - Diagnosis of Heart Disease
  - Diagnosis of Eye Diseases
  - Expert System for Determining Diabetes
- Research work of ES in Automobile Area
  - Diagnosing Heavy-Duty Diesel Engine Faults
  - Car Failure Diagnosis
- Research work of ES in the field of medicine
- Research Work of ES in Agriculture Area
  - Diagnosis of Diseases and Pests in Pakistani Wheat
  - Diagnosis of Diseases in Rice Plant
- Research Work of ES in Steel Making Industry
- Research Work of ES in Education Area
  - Teacher's Performance Evaluation Using Fuzzy Logic
  - Intelligent Tutoring System (ITS)
  - Intelligent Pascal Tutoring System (IPTS)

## III. FUTURE OF EXPERT SYSTEM

As machines are becoming powerful and intelligent day by day , sooner they will aquire much potential to perform highly complex and qualified task. The day is very near when machine would provide better decision then human, and able to learn and repair themselves and able to design algorithms to make better version of them selves and can surpass human intelligence.

## IV. CONCLUSION

Tremendous contribution to the various areas has been made by the expert system from the last fifteen years. Expert system will continue to play an increasingly important role in the various fields. In future major sectors like stock market,multi disciplinary platform, goverment sector would also acquire by an expert machines which are capable enough to handle all sort of

function that a human can perform on the basis of his conscience.

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