Expert Systems and Decision–Making

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ABSTRACT

An Expert System in artificial intelligence is a computer application to solve complex problems in a particular domain & make a right decision in order to implement corrections.

KEYWORDS: *Expert Systems, decision-making processing*

1. INTRODUCTION

The purpose of this paper is to develop an expert system as an interactive computer program the helps a user to solve a complex programme about knowledge represented as if-then rules & make a right decision . Decision-making process is inherently complex due to various forms of risks involved the existing models for decision-making do not capture the learned knowledge well enough.

A human "expert" could tackle two types of problems both economical & professional.

Some of the features of expert system are:-
➢ Understandable & reliable.
➢ High Performance & responsive.

Capability of Expert Systems:-

Advising, assisting, demonstrating, interpreting input, explaining, instructing, suggesting the alternative options to users problems in decision –making & finally deriving a solution ang predicting result.

Incapability of Expert Systems:-

Substituting decision taken by human & producing inadequate knowledge base, prossessing accurate human capabilities & producing output function & finally refining thir owen knowledge.
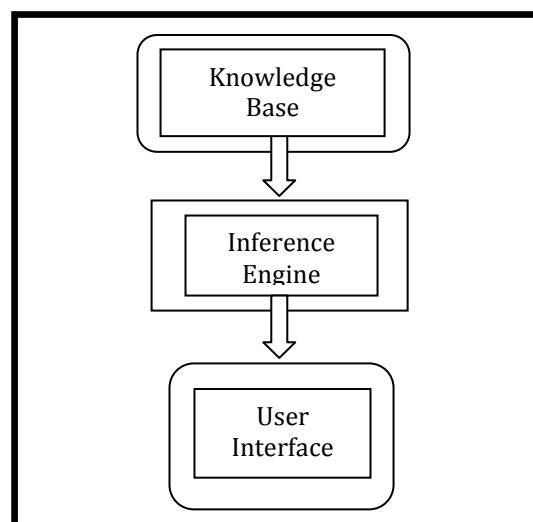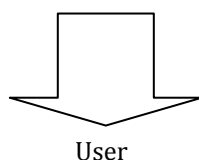
Software Architecture/Components of Expert Systems

Following three are the components :
➢ Knowledge Base
➢ Inference Engine
➢ User Interface

Human Expert-------→Knowledge

Engineer------------→

Components of expert system

1. **Knowledge Base:-**For intelligence knowledge is must plus Knowledge base contains high quality knowledge which is domain specific .The success of an expert system depends highly on the precision & accurate knowledge.

2. **Inference Engine:-**Inference Engine contains rules to solve a problem, it is known as the brain of expert system .To answer the users' query it selects the rules & facts to apply .Inference Engine helps in deducing a problem & is also helpful for formulating conclusions.

3. **User Interface:-**This component of the expert system takes query from a user in a readable form & passes it to the inference engine & is the most part of the expert system. At the end results are displayed to the user & interface interacts with the expert system.

Advantages:-
1. The goal of expert system should be made explicit rather than implicit.
2. Development should be made rapid and maintenance should be made easy.
3. It is possible to develop a prototype in days rather than months or years with the rules of an expert system shell.
4. Maintenance & Integration issues became crucial.

Disadvantages:-
1. Knowledge acquisition problem.
2. In early expert systems more focus was given on Lisp language which produced interpreted code only .Now in today's generation of expert systems programming languages such as Lisp, prolog, hardware platforms such as hadoop , COBOL ,lisp machines & personal computers. As a result in early computers database integration & system was difficult but in today's expert systems integration with large database systems & porting to more standard platforms.

The process of building an expert system
The first step is to determine the characteristics of the problem.

In the second step domain expert and knowledge engineer work together.

In the last step knowledge is translated into an understandable language by a knowledge engineer.

Knowledge Engineer also determines the type of explanation & the use of uncertain knowledge in the reasoning process.

Applications
1. Medical & Hospital facilities.
2. Management of help desk.
3. Performance evaluation of an employee.
4. Detection of virus.
5. Optimization of data Warehouse.
6. Airline Cargo & Scheduling.
7. Stock market Training.
8. Loan Analysts.
9. Process Control & monitoring.
10. Scheduling & planning.

Barriers
1. The KE is technical
2. The expert is co-operative or not available or capable.
3. Management is not supportive enough.
4. The user does not trust the system.

Conclusions
Expert System Management is applied to the business world in today's computer technology. Maximum of cases have shown that an expert system management is an invaluable tool. But it is the responsibility of the managers to help remove systems implementation & need to be aware of systems barriers.

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