ABSTRACT

An expert system is a computer program, which mimics a reasoning of domain expert(s) in decision-making. A fuzzy rule-based system is a reasoning system which is based on known fuzzy facts given by users and matches these facts with the fuzzy rules in rule base of the system in order to deduce any recommendation. My research is focused on applying fuzzy expert system technology in the problem of consultation for computer configurations where customer's requirements are mainly fuzzy information, for example, high CPU level, large monitor size, etc. These requirements can be represented as fuzzy variables and the knowledge of an expert to solve the problem can be represented as fuzzy rules.

The main aim of the thesis is to study and apply the fuzzy rule-based system into the problem of computer consultation. I describe the structure of the fuzzy rules based consultation system for computer configuration with the three main components as knowledge base, inference engine and knowledge acquisition.

The system will generate the best configuration for customers based on their needs. Then a data set consisting of many computer parts combination, which can be used for making one computer, is generated. Different combinations of computer part based on customers needs and based with related fuzzy degree will also be calculated.

The prototype system is implemented in the computer in V.B. 6.0 programming language with the rule base of about 300 fuzzy rules.

This fuzzy modeling can be applied for other similar problems where facts are fuzzy in nature, for example, in business and medicine, especially in Oriental medicine.