Abstract

With the increasing problems of uncertainty, vagueness and imprecision during the modeling of various control systems, the fuzzy logic comes into account. Fuzzy logic was first introduced by a Polish philosopher, Jan Lukasiewicz, in 1930. As the classical logic operates with only two values - 1 (true) and 0 (false), Lukasiewicz introduced a new logic which has more than two truth values. Lukasiewicz extends the range of classical logic to all the real numbers in the interval between 0 and 1 and named it as fuzzy logic. Fuzzy logic is a powerful tool which represents and process human knowledge in the form of fuzzy if-then rules. As the fuzzy logic systems is based on human thinking and natural language and also has a good stability, fast response and less complexity, the applications based on fuzzy logic have been increased significantly. To follow the trend, this paper presents the basic introduction of fuzzy logic, fuzzy sets and its operations. This paper provides a huge description of fuzzy logic system and fuzzy inference system and also provides comparison between fuzzy logic system and conventional control system. In this paper, the various applications of fuzzy logic have been simulated using the MATLAB.
Simulations of Various Applications of Fuzzy Logic using the MATLAB

References

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Index Terms

Computer Science  Fuzzy Systems

Keywords

FIS, fuzzy logic, fuzzy rules, membership function.