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FACULTY OF EGINEERING AND TECHNOLOGY

Soft Computing

LECTURE -15

Umesh Kumar Gera
Assistant Professor
Computer Science & Engineering

OUTLINE

- Fuzzy decision making
- Reference

Fuzzy decision making Approaches

Fuzzy decision making approach follows various steps to take decision.

- Determining the Set of Alternatives
- Evaluating Alternative
- Comparison between Alternatives

Types of Decision

1. **Individual Decision Making**
2. **Multi-person Decision Making**

1. Individual Decision Making

In this type of decision making, only a single person is responsible for taking decisions.

Parameter used

1. Set of possible actions
2. Set of Constraints
3. Set of goals

Equation of all these three parameters

The goals and constraints stated above are expressed in terms of fuzzy sets.

Now consider a set A. Then, the goal and constraints for this set are given by –

$$G_i(a) = \text{composition } [G_i(a)] = G_i^1(G_i(a)) \text{ with } G_i^1$$

$$C_j(a) = \text{composition } [C_j(a)] = C_j^1(C_j(a)) \text{ with } C_j^1 \quad \text{for } a \in A$$

The fuzzy decision in the above case is given by –

$$F_D = min[i \in X_n^{in} fG_i(a), j \in X_m^{in} fC_j(a)]$$

Multi-person Decision Making

Decision making in this case includes several persons so that the expert knowledge from various persons is utilized to make decisions.

Equation are used

Number of persons preferring = Xi to Xj = N(Xi, Xj)

Total number of decision makers = n

Then SC(Xi , Xj)= N(Xi, Xj)/n

Multi-objective Decision Making

- Issues related to multi objective decision making are as follows.

✓To acquire proper information related to the satisfaction of the objectives by various alternatives.

✓To weigh the relative importance of each objective.

Mathematically we can define a universe of n alternatives as given formula

$$A=[a1,a2,a3.....an]$$

MULTIPLE CHOICE QUESTION

16. What need to be satisfied in inductive logic programming?

a) Constraint

b) Entailment constraint

c) Both Constraint & Entailment constraint

d) None of the mentioned

7. How many literals are available in top-down inductive learning methods?

a) 1

b) 2

c) 3

d) 4

8. Which inverts a complete resolution strategy?

a) Inverse resolution

b) Resolution

c) Trilogy

d) None of the mentioned

9. Which method can't be used for expressing relational knowledge?

a) Literal system

b) Variable-based system

c) Attribute-based system

d) None of the mentioned

10. Which approach is used for refining a very general rule through ILP?

a) Top-down approach

b) Bottom-up approach

c) Both Top-down & Bottom-up approach

d) None of the mentioned

REFERENCES

- https://www.maths.tcd.ie/~ormondca/notes/Fuzzy%20Logic%20Notes.pdf