



A NOVEL DECISION MAKING PROBLEM SOLVING USING SOFT SET

K. PRIYA and MOHAMMAD NOOR

Department of Computer science
P. B. Siddhartha College of Arts and Science
Vijayawada, Krishna District, India

Lecturer, Department of Mathematics
A. S and S. G Siddhartha Deegree College
Krishna District Vuyyuru, India

Abstract

In real world, there are facing many decision making issues based on the available data. This is mainly works on the incomplete information and indefinite decision. Generally, various mathematical models are there to work on the decision making. Soft set is the mathematical model that is used to solve the various decision making problems. Optimal solutions are selected for the solving the various complicated decisions making issues. In this paper, a novel decision making problem solver with the integration of soft set. This will solve the complicated issues in decision making, solving and results.

Introduction

Decision making is a daily activity in today's first moving world. It takes significant role in the field of selection of best fit in different alternatives. Different parameters and their values help decision makers to take right decision at right time. The decision making process involves series of activities to draw final conclusion from listed data available for analysis. Sometimes a preplanned decision process might not help to conclude an analysis. In such situation other parameters to be added in the existing analysis process to derive an effective solution to a specific problem. The inherent problem of decision making is related to vagueness and uncertainty aspects due to partial definition, lack of information, having less time to

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think, etc. Therefore classical mathematics is not very effective in dealing with such problems.

The theories like probability, fuzzy set, rough set have tried to resolve the problems by using it expanded tools. But all these techniques do not consider parameterization tools; therefore the above concepts are unable to solve the problems of uncertainties. The soft set concept overcome all these problems and posses rich potential of solving certain decision making problems like customers preference for product selection, fund sources problem, man power recruitment problem etc. This is the global problem that can be fit for the many problem solving issues.

Literature Survey

Cagman and Enginoglu [1] defined soft matrix, to make operations in theoretical studies in soft set more functional. Some properties of soft matrices and a soft max-min decision making (SMmDM) method are discussed. Futhermore, soft max-min decision function was used to solve a house selection problem involving two decision makers.

In 2011, Yang and Ji [2], defined fuzzy soft matrix (FSM) which is very useful in representing and computing the data involving fuzzy soft sets.

They also showed that the SMmDM method of [1], unable to solve decision making problems that involve more than two decision makers as it does not satisfy the commutative law. Later Razak and Mohamad [3] extended the model given by Cagman and Enginoglu [4] where now the decision making problems involved three decision makers was catered using SMmDM method that satisfy the associative law and the researchers solved group decision making problems by incorporating the importance of weight of criteria using analytic hierarchy process (AHP). Cagman and Enginoglu [5] defined fuzzy soft matrix and constructed fuzzy soft max-min decision making method by using And-product in solving the problems.

Problem Solving

Problem solving is a process in which we perceive and resolve a gap between a present situation and a desired goal, with the path to the goal

blocked by known or unknown obstacles. In general, the situation is one not previously encountered, or where at least a specific solution from past experiences is not known. In contrast, decision making is a selection process where one of two or more possible solutions is chosen to reach a desired goal. The steps in both problem solving and decision making are quite similar. In fact, the terms are sometimes used interchangeably.

Skilled and hard-work manpower recruitment problem

Let $W = \{w_1, w_2, w_3, w_4, w_5, w_6, w_7, w_8, \dots, w_n\}$ are the number of workers or programmers that are to be recruited by a Software Development Organization as a possible alternative.

Let $P = \{p_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8, \dots, p_n\}$ be the set of parameters (criteria for every programmer), such that $p_1, p_2, p_3, p_4, p_5, p_6, p_7, p_8, \dots$, and p_n represent the parameters “hardworking”, “discipline”, “honest”, “obedient”, “intelligence”, “innovative”, “entrepreneurial attitude”, and “aspirant” respectively. Hardworking and discipline describe the punctuality of the programmer. Honesty and obedient describe the truth in the behavior of the programmer meanwhile intelligence and innovative describe the innovative attitude of the programmer. Finally entrepreneurial attitude and aspirant describe the exploratory mindset of the programmer. By integrating this problem with softset the selection of hardwork with skilled persons are selected and divide the workers or programmers.

Five-steps to Problem Solving:

- Problem should be defined
- In understanding and communicating the problem effectively, we have to be clear about what the issue is.
- Gather information. What were the circumstances?
- Generate possible solutions. Work together to brainstorm on all possible solutions.
- Evaluate ideas and then choose one.
- Evaluate.

Conclusion

In this paper, a novel decision making problem solving method is defined to solve the Skilled and hard-work manpower recruitment problem. Using soft set to this makes easy to find the skilled persons in any of the company. Based on the given parameters the decision making becomes easier to select the skilled persons.

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