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Profile Matching in Solving Rank Problem

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Abstract: *This research aims to solve the problem selection to a decision. In the profile matching method, a parameter assessed on the difference between the target value with the value that is owned by an individual. There are two important parameters in this method such as core factors and secondary factors. These values are converted into a percentage of weight so as to produce the final decision as a determinant of the data which will be closer to the predetermined targets. By doing this method, sorting the data against specific criteria that are dynamicallyperformed.*

Keywords: *Profile Matching, Support System, Rank Problem*

I. Introduction

A decision Support System needs to rank a set of data[1]. That is performed to facilitate further processing of the data. Ordering is a basic algorithm that is often required in retrieving the solution. Various ranking algorithms have been created. An understanding of some basic ranking algorithms needs to know, including how to use the program.

There is a difference between sorting and ranking. Usually, the sorting performs sorting the data based on specific criteria. The data set will be sorted through a filter process where these criteria are static. In ranking, data will be sorted based on the calculation of criteria that are dynamic. The first data and the subsequent data is a collection of data that have the significant difference[2]. This problem is solved by a method that performs sorting based on the parameters are many and varied, known as aspects. Profile matching method is to sort data were highly variable and had many parameters by calculating the gap between the original data with a specified target value. Each aspect is given the weight of the load as needed. The values appear in the final calculation are sorted in ascending and descending order.

II. Theories

Sequencing data is defined as a process to reconstitute the set of objects using certain rules[3]. According to Microsoft's Bookshelf, definition sorting algorithm is an algorithm to put a set of data elements in a particular order based on one or more keys in each item. There are two kinds of sequences commonly used in the sort is ascending and descending.

Profile Matching is a decision-making mechanism to assume that there is an ideal level of predictor variables that must be fulfilled by the parameters, instead of the static criteria. In a profile matching process, an outline of the process of comparing the individual's competence into the aspects that can be known differences in competence called gap[4][5]. The smaller the gap generated the weight of large value which means it has a better chance to occupy the top position. Analyzing the data according to specific targets; profile matching method does the method, which in the process is first to determine the competence required by the data. In a profile matching process outlines a process of comparing between individual competencies and aspects that can be known the difference to both.

Profile Matching algorithm is divided into several steps:

- Aspect and Sub Aspect
- Scoring
- Gap
- Core Factor & Secondary Factor
- Total Weight
- Ranking

The gap is the difference between the value of the aspect and the target value. The gap can be obtained by performing this formula.

$$Gap = Aspect\ Value - Target\ Value \qquad (1)$$

While Core and Secondary Factor are calculated by these formulas.

$$NCF = \frac{\sum_{i=1}^{n} NC}{\sum_{i=1}^{n} IC}$$

$$NSF = \frac{\sum_{i=1}^{n} NS}{\sum_{i=1}^{n} IS}$$

NCF : Core Factor Value
NSF : Secondary Factor Value
NC : Total Weight Core Factor
NS : Total Weight Secondary Factor
IC : Total Item Core Factor
IS : Total Item Secondary Factor

III. Profile Matching Raw Data

Let's look at the next example. Table 1 shows that we have five pieces of sample data, each sample has its credit score. We split the credit value of between 1 and three where the number 1 being the lowest value (worst) while the number 3 is the highest value (best).

Table 1 Converted Data

	NAME	ASPECTS										
		FIRST				SECOND			THIRD			
		A	B	C	D	E	F	G	H	I	J	K
		CF	SF	SF	CF	CF	CF	SF	SF	SF	CF	CF
1	CABLE 1	2	3	1	2	3	2	1	2	3	3	1
2	CABLE 2	3	2	1	2	1	2	2	2	2	3	1
3	CABLE 3	1	2	3	3	1	3	3	2	2	3	1
4	CABLE 4	2	3	1	3	2	2	2	2	3	3	1
5	CABLE 5	1	2	3	2	1	2	1	2	3	3	1

First, the data is categorized into three aspects, first, second and third. Every aspect has subcategories where the first aspect is divided into four categories; the second point consists of three categories, and the third aspect consists of four categories. Moreover, finally, the data has eleven parameters. Each parameter has a value of each obtained previously. Once all the parameters have been filled, the calculation of profile matching is implemented

IV. Result and Discussion

Once the target value is determined, the time to find the gap value between these two values. Ascertain the value of the target based on the agreement of the final destination. It is illustrated in Table 2.

Table2 Target Value

TARGET	2	2	2	2	1	1	1	2	2	2	2

After the gap values are retrieved, we convert those values into Profile Matching rule and count the Core and Secondary Factors of those aspects.We have previously determined in advance which are the core factors and secondary factors. Let’s see the following rules in Table 3 to Table 6.

Table3 Gap Value

GAP		FIRST				SECOND			THIRD			
1	CABLE 1	0	1	-1	0	2	1	0	0	1	1	-1
2	CABLE 2	1	0	-1	0	0	1	1	0	0	1	-1
3	CABLE 3	-1	0	1	1	0	2	2	0	0	1	-1
4	CABLE 4	0	1	-1	1	1	1	1	0	1	1	-1
5	CABLE 5	-1	0	1	0	0	1	0	0	1	1	-1

GAP	VALUE
0	4
1	4,5
-1	3,5
2	5
-2	3

Table4 Core Factor and Secondary Factor of First Aspect

WEIGHT		FIRST				CF	SF
1	CABLE 1	4,00	4,50	3,50	4,00	4,00	4,00
2	CABLE 2	4,50	4,00	3,50	4,00	4,25	3,75
3	CABLE 3	3,50	4,00	4,50	4,50	4,00	4,25
4	CABLE 4	4,00	4,50	3,50	4,50	4,25	4,00
5	CABLE 5	3,50	4,00	4,50	4,00	3,75	4,25

Table5 Core Factor and Secondary Factor of Second Aspect

WEIGHT		SECOND			CF	SF
1	CABLE 1	5,00	4,50	4,00	4,75	4,00
2	CABLE 2	4,00	4,50	4,50	4,25	4,50
3	CABLE 3	4,00	5,00	5,00	4,50	5,00
4	CABLE 4	4,50	4,50	4,50	4,50	4,50
5	CABLE 5	4,00	4,50	4,00	4,25	4,00

Table6 Core Factor and Secondary Factor of Third Aspect

WEIGHT		THIRD				CF	SF
1	CABLE 1	4,00	4,50	4,50	3,50	4,00	4,25
2	CABLE 2	4,00	4,00	4,50	3,50	4,00	4,00
3	CABLE 3	4,00	4,00	4,50	3,50	4,00	4,00
4	CABLE 4	4,00	4,50	4,50	3,50	4,00	4,25
5	CABLE 5	4,00	4,50	4,50	3,50	4,00	4,25

After the core and secondary factor value is obtained, we compute the average value of the ratio of 6:4 between the core and secondary factor. The table below is the result of the acquisition of such calculations.

Table7 Aspect Values

TOTAL		N1	N2	N3
1	CABLE 1	4,00	4,45	4,10
2	CABLE 2	4,05	4,35	4,00
3	CABLE 3	4,10	4,70	4,00
4	CABLE 4	4,15	4,50	4,10
5	CABLE 5	3,95	4,15	4,10

The values of all aspects have been obtained. To find the rank, the value must be accumulated with the aspect ratio of 4:2:4 and then the average yield is the final score. It is on Table 8.

Table8 Result of Final Score

RANKING		VALUES			
		N1	N2	N3	R
1	CABLE 1	4,00	4,45	4,10	4,13
2	CABLE 2	4,05	4,35	4,00	4,09
3	CABLE 3	4,10	4,70	4,00	4,18
4	CABLE 4	4,15	4,50	4,10	4,20
5	CABLE 5	3,95	4,15	4,10	4,05

Now the value of the ranking will be sorted in the inverted position of the highest value to lowest value. Table 9 illustrates the results of the final data which have been ranked.

Table9 Descending Order of Final Score

RANKING		VALUES			
		N1	N2	N3	R
4	CABLE 4	4,15	4,50	4,10	4,20
3	CABLE 3	4,10	4,70	4,00	4,18
1	CABLE 1	4,00	4,45	4,10	4,13
2	CABLE 2	4,05	4,35	4,00	4,09
5	CABLE 5	3,95	4,15	4,10	4,05

V. Conclusion

From the explanation above, we can see that the profile matching method can resolve the case of sorting dynamically. Parameters collected as aspects of the main requirements to perform the calculation. With

the results of calculations which have high accuracy, the difference is less likely to form a pattern of a different order so that the possibility of the data have the same value will be obviated.

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