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Mathematical Fuzzy Logic Method on Parents and Their Situations towards Children's

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Abstract

Parenting is the multitasked skill where no parent can tell out that he/she is undeniable in parenting. Now and again guardians feel that parenting is the most troublesome undertaking that they involvement in life. Guardians should be committed and given to their responsibility in dealing with children. Children at the present period, having full presentation to the general public expects parcel of adoration and love from their folks. They expect additionally request their folks to invest energy for them. Added to parenting, single parenting includes an ever increasing number of additional obligations and duties in raising their wards. In this paper we examined about the genuine circumstance issue on the issues/issues relating to single guardians utilizing Fuzzy Clustering Method. This paper comprises of four areas. Area one is starting in nature that arrangements with the depiction of the title. Segment two manages the depiction of Fuzzy Clustering method. Segment three gives the investigation and examination of the issue. Segment four gives the calculation worked for the model. Segment five gives the conclusion and recommendation in light of the investigation.

Keywords: Fuzzy logic, fuzzy clustering, Mathematical methods, classification.

I. Introduction

The culture that living together in married life and bringing up well the children by the parents have seen drastic changes from past to the present. Today's technology, media and others play a major role in affecting the normal situation of the life. The impact of technology development though having its own advantages in its side but have equal disadvantages in leading the smooth and calm family life. Most people tell out openly that usage of mobiles to speak with his/her better half before marriage acts as one of the major reasons for both to expect a lot from each other after marriage, that even one situation if one fails to satisfy the other, the effect of it causes a lot which may also lead to the breakup of the family[1].

Survey has shown most percentage in Chennai have single parenting due to varied reasons. The effect of single parenting affects major in bringing up their children in an acceptable way in the society. Single parenting has its own advantages and disadvantages. The example of one does not suits the other. It varies to each family. Children brought by single parenting have achieved to the top most rather at the other extreme most children lost their life without realizing the importance of living. Both the single parents and their family members are affected a lot in many ways. They struggle hard to live in the society due to many questions raise towards them. They find difficult to tackle the situations that they are undergoing each day. Most people of the society are good at gossip, they find pleasure in doing so. Single parents of the society should be confident and courageous enough to face the challenges of life both for his/her survival and for bringing up their children too. They have added responsibilities and work in parenting their children.Than others single guardians ought to be extremely cautious and specific about their children at each phase of their advancement. Their children can be effortlessly influenced in mental perspective. Both the sexual orientations of single guardians experience the issues similarly[2,3]

II. Related Work

At present, fuzzy logic has drawn the consideration of scientists everywhere throughout the world. The

thought backpedals to 1965, the year in which Professor Zadeh presented the "fuzzy set hypothesis". Today, an expanding number of uses of fuzzy logic is experienced, the majority of these originating from Japanese organizations. So in the US and much more in Europe the present thought is that we may miss the association in the event that we won't investigate and abuse fuzzy logic at the earliest opportunity. An extensive variety of utilizations of fizzy logic or related terms like fizzy sets, fiizzy thinking and fiuzzy frameworks is canvassed in the writing. Illustrations run from prepare control to vacuum cleaners. Indeed, even in resistance applications that may not appear to be fuzzy or dubious at first sight, illustrations can be found. One of these cases is the discharge control arrangement of the Goalkeeper Close In Weapon System, which is an air safeguard firearm framework protecting a ship against hostile to send rockets like the outstanding Exocet. In an investigation about conceivable forecast process changes, the utilization of fuzzy thinking methods has been proposed. This forecast procedure think about has started this examination for fuzzy logic applications in flame control frameworks. The investigation is performed for the Ministry of Defense by TNO-FEL. In the previous couple of years a gigantic measure of well known writing managing prologue to fuzzy logic has been distributed, some of which are alluded to in the following segment. So it appears a misuse of push to make this report simply one more prologue to fuzzy logic. In spite of the thought displayed in many articles on fuzziness, it is my supposition that nature isn't fuzzy. Just individuals handle it in a loose, vague or fuzzy way. As such, learning that individuals have about regular marvels has a tendency to be dubious or uncertain to a specific degree. In (I 1I an unmistakable overview of fuzziness, equivocalness and imprecision is given. The creator recognizes the fuzzy idea, the equivocal or purposefully fizzy idea and imprecision. The fitzzy idea is an idea which is very much characterized, however where objects exist which satisfy this idea just to a specific degree. Consider for example the idea 'jobless'. What to think about a man who labors for 10 hours seven days contrasted with the full 40 hours. Is that individual jobless ? A sensible answer is to call such a man somewhat jobless, or jobless to a specific degree (say 0.75 on a scale from 0 to 1). An equivocal or deliberately fiuzzy idea is where there is difference over the properties which constitute this idea. This sort of fuzziness shows up when (marginally) extraordinary ideas are assigned with a similar name. An idea is called loose on the off chance that it doesn't absolutely coordinate with the depicted marvel. For instance on the off chance that it takes you 6 hours and five minutes to make a trip from Amsterdam to Paris yet you say 6 hours then you are loose. Indeed, even in more correct, specialized circumstances imprecision is an ordinary marvel. A rush, for example, will have a length which is given with a specific resistance. Actually, when individuals (utilizing a characteristic dialect) manage persistent amounts, they quite often experience vagary; we can consider this fuzziness. Just when individuals manage conceptual things, for example persistent arithmetic, outright exactness is conceivable. Different ranges where this is conceivable, at any rate on a basic level, are the place discrete numbers are concerned. This shows up in tallying issues. In any case, the consequence of tallying may likewise be uncertain[4,5,6].

III. Methodology

Hard Clustering

In Hard Clustering we influence a hard parcel of the information to set Z. As it were, we separate the min to c≥2 bunches. With a segment, we imply that [7]

$$\bigcup_{i=1}^{c} A_i = Z$$

and $A_i \cap A_j = \phi, \forall\, i \neq j$ .....(1)

Additionally, none of the sets, Ai might be void. To demonstrate a distributing, we make utilization of participation capacities (x). In the event that

(x)=1,then protest x is in bunch k. In view of the enrollment capacities, we can amass the Partition Matrix

U, of which (x) are the components. At last there is a decide that

μ_k,

$\sum_{i=1}^{c} \mu_k(x) = 1 \ \forall x$ ..... (2)

At the end of the day, each protest is just piece of one bunch [6].

Fuzzy Clustering

Hard clustering has a weakness. At the point when a question generally falls between two groups Ai and Aj, it must be put into one of the bunches. Likewise, exceptions must be placed in some bunch. This is unwanted. In any case, it can be settled by fuzzy clustering.

In Fuzzy clustering, we make a Fuzzy segment of the information. Presently, the enrollment work (x) can be any an incentive in the vicinity of 0 and 1. This means a question Zk can be for 0.2 sections in Ai and for 0.8 sections in Aj. In any case, prerequisite (2) still applies. Along these lines, the total of the enrollment capacities still must be 1. The arrangement of every single fuzzy parcel that can be framed thusly is indicated by MFC. Fuzzy parceling again has a drawback. When we have an anomaly in the information (being a protest that doesn't generally have a place with any group), regardless we need to relegate it to bunches. That is, the total of its enrollment capacities still should measure up to one [7].

Fuzzy C-Means Clustering

In fuzzy clustering, each point has a level of having a place with groups, as in fuzzy logic, as opposed to having a place totally with only one bunch. Hence, focuses on the edge of a group, might be in a bunch to a lesser degree than focuses in the focal point of group for each point x there is no coefficient giving the level of having a place in the kth group (x) = 1. As a rule, thesumofthosecoefficientsisdefinedtobe1.

$$\sum_{n=1} mn\ cluster\ \mu_k = 1\ \forall x \quad \text{……. (3)}$$

With fuzzy c-means, the centroid of a cluster is the mean of all points, weighted by their degree of belonging to the cluster

$$Center_k = \frac{\sum_x \mu_k(x)^m x}{\sum_x \mu_k(x)^m} \quad \text{…… (4)}$$

The degree of belonging is related to the inverse of the distance to the cluster

$$\mu_k(x) = \frac{1}{d(Center_k, x)} \quad \text{…… (5)}$$

Then the coefficients are normalized and fuzzy field with a real parameter $m > 1$ so that their sum is 1. So

$$\mu_k(x) = \frac{1}{\sum_j \left(\frac{Center_k x}{Center_j x}\right)^{2/(m-1)}} \quad \text{…… (6)}$$

Shape condition 2, this is proportionate to normalizing the coefficient directly to make their entirety 1.When mis-near 1, at that point group focus closes to the fact of the matter is given considerably more weight than the others, and the calculation is like k-means [7].

IV. Proposed Methodology for Results and Discussion

Linguistic questionnaire was administered to the single parent of both genders in Chennai. Most problems faced by them to survive in this world were taken as the attributes. Fuzzy c- means clustering was implemented to the study of the problem using (4.1) to classify the problems under three categories viz, low, medium and high[7].

C1 - Lack of sufficient income.

C2 - Stressed due to excess work both in office and in the house.

C3 - Stressed and traumatized when the society around look with suspicion on her fidelity.

C4 - Unable to answer the queries raised by the child about father.

C5 - Hard to cope up with sexual urge.

C6 - Health problem due to over work & stress.

C7 - Children suffer emotional behaviour problems.

C8 - Children become independent and hard working.

C9 - Children involved in decision making unlike the children of duel parents.

C10 - Children behave naughty / disobedient.

C11 - Mother is stricter unlike in normal families

C12 - Mother feels inferiority complex with regard to child care

C13 - Deserted father lives in disciplined suicidal life.

The respondents were invited to express their viewpoints. The following figure and tables show the result of our analysis. The analysis is carried on a 10-point rating scale.

The ratings and the Standard Deviation of the attributes for the causes of failures in mathematics by engineering students have been subjected to fuzzy c-means clustering using algorithm (4.1) and the following results are shown in Table1 according to the expert's opinion. The following table gives the 3-cluster combination.

The first cluster comprises of the attributes with average rating from 2 to 5.5 with a mid-value 3.25. The second cluster range is from 3.5 to 7.5 with a mid-value 5.5 and the third cluster has a range of 6.5-10 with a mid-value 8.25.

The first , second and third clusters range indicates the problems faced by the single parents of Chennai show the low, moderate and high level of weightage. There is overlapping ranges as in characteristic of a fuzzy based cluster.[7]

For the 3-cluster Range of level of Dominant Cause (i.e) [1,3,4]

Tabele 1: 3-Cluster Range of Level of Dominant Cause

	Cluster 1	**Cluster 2**	**Cluster 3**
Range	**3.12- 6.9**	**5.6-8.4**	**7.3- 12**
Middle value	**5.1**	**7.0**	**9.65**
Class	**low**	**moderate**	**High**

Mean Rating of the dominant problems faced by the single parents in Chennai

V. Conclusion

Taking the opinions of the problems faced by single parents in Chennai, degree of membership value is calculated using the above algorithm is shown in Table: 2.

Attributes 11 and 12 with a mean rating 3.2 and 3.1 is entirely (100%) with a membership value of 1in cluster 1. (i.e.) LOW.

Attributes 4 and 5 with a mean rating 6.2 and 5.3 is entirely (100 %) with a membership value of 1in cluster 2. (i.e.) MODERATE.

Attributes 1, 6 and 7 with a mean rating 8.7, 8.1 and 9.5 is entirely (100 %) with a membership value of 1in cluster 3. (i.e.) HIGH.

Attributes 8, 9 and 13 with a mean ratings 5.3, 4.9 and 4.3 belongs to 10 % in cluster 1 and 90 % in cluster 2, 30 % in cluster 1 and 70% in cluster 2 and 40 % in cluster 1 and 60 % in cluster 2 (i.e.) between LOW and MODERATE.

Attributes 2, 3, 10 with a mean ratings 7.4, 7.1 and 7.0 belongs to 10 % in cluster 2 and 90 % in cluster 3, 40 % in cluster 2 and 60 % in cluster 3 and 50 % in cluster 2 and 50 % in cluster 3. (i.e.) between MODERATE and HIGH.

On analysis the major problems faced by the single parents in Chennai are found to lie in the high range of clusters with the range value from 6.5 to 10. The dominant issues pertaining to the single parents has the membership value one in the high range of classification of clusters. [8,10,6] C1 - Lack of sufficient income.

C6 - Health problem due to over work & stress.

C7 - Children suffer emotional behavior problems.

Are the attributes contributing to the dominant problems experienced by the single parents in Chennai.

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