A Case Study of Multi Attribute Decision Making Problem for Solving Intuitionistic Fuzzy Soft Matrix in Medical Diagnosis

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ABSTRACT:
Soft set theory is a newly mathematical tool to deal with uncertain problems. It has a rich potential for application in solving practical problems in economics, social science, medical science etc. The concept of fuzzy soft sets extended fuzzy soft set to Intuitionistic fuzzy soft sets. In this paper we proposed intuitionistic fuzzy dominance matrix for solving multi attribute decision making problem in intuitionistic fuzzy soft sets. Finally, we give an example which shows that the method can be successfully applied to many problems that contain uncertainties.

Keywords:
Soft sets, Fuzzy soft matrix (FSM), Fuzzy soft set (FSS), Intuitionistic fuzzy soft matrix(IFSM), dominance matrix
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1 Introduction

In the fuzzy set theory [**15**] there were no scopes to think about the hesitation in the membership degree, which arise in various real life situations. To overcome these situations Atanassov [**1**] introduced theory of intuitionistic fuzzy set in 1986 as a generalization of fuzzy set.Most of the problems in engineering, medical science, economics, environments etc have various uncertainties. Molodtsov[12] initiated the concept of soft set theory as a mathematical tool for dealing with uncertainties. Research works on soft set theory are progressing rapidly. Maji et al.[8] defined several operations on soft set theory. Combining soft sets with fuzzy sets and intuitionistic fuzzy sets, Feng et al.[7] and Maji et al.[9,10] defined fuzzy soft sets and intuitionistic fuzzy soft sets which are rich potentials for solving decision making problems.Matrices play an important role in the broad area of science and engineering. The classical matrix theory cannot solve the problems involving various types of uncertainties. In [14] Yang et al, initiated a matrix representation of a fuzzy soft set and applied it in certain decision making problems. The concept of fuzzy soft matrix theory was studied by Borah et al. in [2]. In [5], Chetia et al. and in [13] Rajarajeswari et al. defined intuitionistic fuzzy soft matrix.Again it is well known that the matrices are important tools to model/study different mathematical problems specially in linear algebra. Due to huge applications of imprecise data in the above mentioned areas, hence are motivated to study the different matrices containing these data. Soft set is also one of the interesting and popular subject, where different types of decision making problem can be solved. So attempt has been made to study the decision making problem by using intuitionistic fuzzy soft aggregation operator. Das and Kar [**6**] proposed an algorithmic approach for group decision making based on IF soft set. The authors [6] have used cardinality of IF soft set as a novel concept for assigning confident weight to the set of experts. Cagman and Enginogh[3 ,4] pioneered the concept of soft matrix to represent a soft set. Mao et al.[11] presented the concept of intuitionistic fuzzy soft matrix(IFSM) and applied it in group decision making problem.

In this paper, we define dominance matrix that allows constructing more efficient decision making method. Finally, we give an example which shows that the method can be successfully applied to many problems that contain uncertainties.

2 Preliminaries and Definitions :

In this section we briefly review some basic definitions related to fuzzy soft set, intuitionistic fuzzy soft sets, soft sets and intuitionistic fuzzy soft matrix their generalizations, which will be used in the rest of the paper.

Definition 2.1:

Let U be an initial universe set and E be a set of parameters. Let P (U) denotes the power Set of U. Let A⊆E. A pair (F_A, E) is called a **soft set** over U, where F_A is a mapping given by :E→ P (U) Such that F_A (e) = φ if e ∉A. Here F_A is called approximate function of the soft set (F_A, E). The set F_A (e) is called e- approximate value set which consist of related objects of the parameter e ∈E. In other words, a soft set over U is a parameterized family of subsets of the universe U. **Example 2.1:** Let U={ e_1 , e_2 , e_3 , e_4} be a set of four pens and E={{ e_1 , e_2 , e_3 , e_4}= { black (e_1) , red (e_2),blue (e_3),green(e_4) } be a set of parameters. If A = {e_1 , e_2, e_3 ,e_4} ⊆ E. Let F_A (e_1)= { u_1 , u_2, u_3 , u_4} and F_A (e_2)= { u_1 , u_4} ,F_A (e_3)= { u_1 , u_3, u_4} ,F_A (e_4)= { u_4} then we write the soft set (F_A,E)= {(e_1,{ u_1 , u_2 , u_3 , u_4}), (e_2,{ u_1 , u_4}), (e_3,{ u_1 , u_3 , u_4}), (e_4,{ u_4})} over U which describe the "colour of the pens" which Mr. A is going to buy. We may represent the fuzzy soft set in the following form :

U	**e_1**	**e_2**	**e_3**	**e_4**
u_1	**1**	**1**	**1**	**0**
u_2	**1**	**0**	**0**	**0**
u_3	**1**	**0**	**1**	**0**
u_4	**1**	**1**	**1**	**1**

Definition 2.2:

Let U be an initial universe, E be the set of all parameters and A⊆ E. A pair (F_A, E) is called a **fuzzy soft set** over U where F_A is a mapping given by, F_A :E⟶ P(U) Such that F_A (e) = φ if e∉A, Where φ is a null fuzzy set and $\tilde{P}$(U) denotes the collection of all subsets of U.

Example 2.2 Consider the example 2.1, here we cannot express with only two real numbers 0 and 1, we can characterized it by a membership function instead of crisp number 0 and 1, which associate with each element a real number in the interval [0,1].Then **(**F_A,E) ={ F_A (e_1) ={(u_1 ,0.8),(u_2 ,0.6),(u_3 ,0.5), (u_4 ,0.2)},F_A (e_2) = {(u1, 0.5), (u_4, 0.2)}, F_A (e_3) ={(u_1 ,0.6),(u_3,0.4)(u_4,0.8)}, F_A (e_4) = {(u_4, 0.4)} is the fuzzy soft set representing the "colour of the pens" Which Mr. A is going to buy. We may represent the fuzzy soft set in the following form:

U	**e_1**	**e_2**	**e_3**	**e_4**
u_1	**0.8**	**0.5**	**0.6**	**0**
u_2	**0.6**	**0**	**0**	**0**
u_3	**0.5**	**0.0**	**0.4**	**0**
u_4	**0.2**	**0.2**	**0.8**	**0.4**

Definition *2.3*

Let (F_A , E) be fuzzy soft set over U. Then a subset of U x E is uniquely defined by R_A = {(u, e): e∈ A, u ∈ F_A (e)}, which is called relation form of (F_A, E) . The characteristic function of R_A is written by μ_{RA} : U x E ⟶ [0 , 1] , where μ_{RA}(u , e) ∈ [0,1] is the membership value of u ∈U for each e ∈U. If μ_{ij}= μ_{RA} (u_i, e_j) , we can define a matrix

$$[\mu_{ij}]_{mxn} = \begin{bmatrix} \mu_{11} & \mu_{12} & \cdots & \mu_{1n} \\ \mu_{21} & \mu_{22} & \cdots & \mu_{2n} \\ \cdots & \cdots & \cdots & \cdots \\ \mu_{m1} & \mu_{m2} & \cdots & \mu_{mn} \end{bmatrix}$$

Which is called an m x n soft matrix of the soft set (F_A,E) over U. Therefore we can say that a fuzzy soft set (F_A, E) is uniquely characterized by the matrix $[\mu_{ij}]_{m\times n}$ and both concepts are interchangeable.

Example2.3 Assume that U = { u_1 , u_2 , u_3 , u_4, u_5, u_6} is a universal set and E = { e_1 , e_2 , e_3, e_4} is a set of all parameters. If A⊆ E = { e_1 , e_2 , e_3 , e_4 } and F_A (e_1)= { (u_1 ,.7), (u_2,.6) , (u_3,.8) , (u_4,.2),(u_5,.7), (u_6,.8)} ,F_A (e_2)= { (u_1,.5) , (u_3,.8) , (u_4,.1) ,(u_5,.2), (u_6,.9)},F_A (e_3)= { (u_1,.5) , (u_2,.7) , (u_4,.5) , (u_5,.6),(u_6,.7) },F_A (e_4) = { (u_1,.9) , (u_6,.1) }}**.** Then the fuzzy soft set (F_A ,E) is a parameterized family { F_A (e_1) , F_A (e_2) , F_A (e_3), F_A (e_4)} of all fuzzy sets over U. Hence the fuzzy soft matrix $[\mu_{ij}]$ can be written as

$$[\mu_{ij}] = \begin{bmatrix} 0.7 & 0.5 & 0.5 & 0.9 \\ 0.6 & 0.0 & 0.7 & 0.0 \\ 0.8 & 0.8 & 0.0 & 0.0 \\ 0.2 & 0.1 & 0.5 & 0.0 \\ 0.7 & 0.2 & 0.6 & 0.0 \\ 0.8 & 0.9 & 0.7 & 0.1 \end{bmatrix}$$

Definition 2.4

A fuzzy soft matrix of order $1\times n$ i.e., with a single row is called a **row-fuzzy soft Matrix**.

Definition 2.5

A fuzzy soft matrix of order $m\times 1$ i.e., with a single column is called a **column-fuzzy soft matrix**.

3. Intuitionistic Fuzzy Soft Matrix Theory

3.1 Intuitionistic Fuzzy Soft Set (IFSS)

Let U be an initial universe, E be the set of parameters and A⊆E. A pair (F_A,E) is called an intuitionistic fuzzy soft set (IFSS) over U, where F_A is a mapping given by F_A :E→ I^U ,where I^U denotes the collection of all intuitionistic fuzzy subsets of U.

Example 3.1:

Suppose that U = {u_1,u_2,u_3,u_4} be a set of four shirts and E={white(e_1),blue(e_2),green(e_3)} be a set of parameters. If A={e_1,e_2}∈E.LetF_A(e1)={(u_1,0.3,0.7),(u_2,0.8,0.1),(u_3,0.4,0.2),(u_4, 0.6, 0.2)}

F_A(e_2)={(u_1,0.8,0.1),(u_2,0.9,0.1),(u_3,0.4,0.5),(u_4,0.2,0.3)} then we write intuitionistic fuzzy soft set is

(F_A, E)={F_A(e_1)={(u_1,0.3,0.7),(u_2,0.8,0.1),(u_3,0.4,0.2),(u_4, 0.6, 0.2)}

F_A(e_2)={(u_1,0.8,0.1),(u_2,0.9,0.1),(u_3,0.4,0.5),(u_4,0.2,0.3)}}

We would represent this intuitionistic fuzzy soft set in matrix form as

$$\begin{bmatrix} (.3,.7) & (.8,.1) & (.0,.0) \\ (.8,.1) & (.9,.1) & (.0,.0) \\ (.4,.2) & (.4,.5) & (.0,.0) \\ (.6,.2) & (.2,.3) & (.0,.0) \end{bmatrix}$$

3.2. Intuitionistic Fuzzy Soft Matrix (IFSM) [5]

Let U be an initial universe, E be the set of parameters and A⊆E. Let (F_A, E) be an intuitionistic fuzzy soft set (IFSS) over U. Then a subset of U×E is uniquely defined by R_A= {(u, e): e∈A, u∈F_A (e)} which is called relation form of (F_A,E). The membership and non-membership functions of are written by μ_{RA}: U×E→[0,1] and γ_{RA}: U×E→[0,1] whereμ_{RA}:(u,e) ∈ [0,1] and γ_{RA}:(u,e) ∈[0,1] are the membership value and nonmembership value of u∈U for each e∈E. If (u_{ij} ,v_i) = ($\mu_{RA}(u_i ,e_j)$,$\gamma_{RA}(u_i ,e_j)$) we can define a

$$[(u_{ij} ,v_{ij})]_{m\times n}= \begin{bmatrix} (\mu_{11},\nu_{11}) & (\mu_{12},\nu_{12}) & \dots & (\mu_{1n},\nu_{1n}) \\ (\mu_{21},\nu_{21}) & (\mu_{22},\nu_{22}) & \dots & (\mu_{2n},\nu_{2n}) \\ \dots & \dots & \dots & \dots \\ (\mu_{m1},\nu_{m1}) & (\mu_{m2},\nu_{m2}) & \dots & (\mu_{mn},\nu_{mn}) \end{bmatrix}$$

Which is called an m×n IFSM of the IFSS (F_A, E) over U. Therefore, we can say that IFSS (F_A,E) is uniquely characterized by the matrix $[(\mu_{ij}, v_{ij})]_{m\times n}$ and both concepts are interchangeable .The set of all m×n IFS matrices will be denoted by $IFSM_{m\times n}$.

Example 3.2. Let U ={ u_1 , u_2 , u_3 , u_4, u_5} is a universal set and E = { e_1 , e_2 , e_3 , e_4, e_5},is a set of parameters. If A = { e_1 , e_3 , e_4, e_5} ⊆ E andF_A (e_1)= { (u_4,.8,.4) , (u_2,.8,.1) , (u_3,.5 , .5) , (u_4,.5,.4) ,(u_5,.2,.1) }, F_A (e_3)= {(u_1,.4,.6) ,(u_3,.2 ,.2),(u_4,1,0) , (u_5,.6,.2)}, F_A (e_4)= { (u_1,.6 ,.2),(u_2,1,0) ,(u_3,.8 ,.2), (u_4,.6,.3),(u_5,.7,.3) }, F_A (e_5)= { (u_1,.7 ,.8),(u_2,1,0) ,(u_3,.6 ,.5), (u_4,.5,.3) ,(u_5,.9,.2) }}.Then the IFS set (F_A,E) is a parameterized family {F_A(e_1), F_A(e_2), F_A(e_3), F_A(e_4)} of all IFS sets over U. Hence IFSM $[(\mu_{ij},\gamma_{ij})]$ can be written as

$$[(\mu_{ij},\gamma_{ij})]=\begin{bmatrix} (.8,.4) & (0,0) & (.4,.6) & (.6,.2) & (.7,.8) \\ (.8,.1) & (0,0) & (0,0) & (1,0) & (1\ ,\ 0) \\ (.5,.5) & (0,0) & (.2,.2) & (.8,.2) & (.6,.5) \\ (.5,.4) & (0,0) & (1\ ,0) & (.6,.3) & (.5,.3) \\ (.2,.1) & (0,0) & (.6,.2) & (.7,.3) & (.9,.2\ ) \end{bmatrix}$$

***3.3 Intuitionistic Fuzzy Soft Set Complement Matrix*:**

Let A = [a] = $[a_{ij}]$ IFSM $_{mxn}$, where $a_{ij} = (\mu_j\ (c_i), v_j\ (c_i))$ for all i, j. Then A^C IFSM is called a Intuitionistic Fuzzy Soft Complement Matrix if $A^C = [d_{ij}\ ]_{mxn}$, where $d_{ij} =(v_j\ (c\ ), \mu_j\ (c\ ))$ for all i, j.

3.4 Addition and Subtraction of Intuitionistic Fuzzy Soft Matrix:

If A = $[a_{ij}]$ IFSM mxn, B = $[b_{ij}]$ IFSM mxn, then we define the addition and subtraction of Intuitionistic Fuzzy Soft Matrices of A and B as;

A + B = {max $[(\mu_A(a_{ij}), \mu_B(b_{ij})]$, min$[v_A(a_{ij}), v_B(b_{ij})]$} ∀ i, j

A – B = { min$[\mu_A(a_{ij}), \mu_B(b_{ij})]$, max[$v_A(a_{ij}), v_B(b_{ij})$] ∀} i, j.

3.5 Product of Intuitionistic Fuzzy Soft Matrix:

If A = $[a_{ij}\ ]$∈ IFSM, B = $[b_{ij}\ ]$ ∈ IFSM , then we define A*B, multiplication of A and B as

A*B = $[c\ _{ij}]$ mxp S = {max min$[(\mu_A\ (a_{ij}\ ), \mu_B\ (b_{ij}\ )\ ]$, min max$[v_A\ (a_{ij}\ ),v_B(b_{ij}\ )$} ∀ i, j.

4.*Intuitionistic Fuzzy dominance matrix*

The problem which we deal which is the choosing of best alternatives among a finite set of alternatives X={x_1,x_2,….,x_m},m≥2, depending on a finite set of attributes C={c_1,c_2,….,c_n},n≥2 the alternatives will be classified from the best to worst, using the information known attributes according to a set of experts E={e_1,e_2,….e_k},k≥2.Intuitionistic fuzzy dominance degree represents the dominance of expert over other expert on an alternative attribute pair.

4.1 Definition of Intuitionistic Fuzzy dominance matrix

An Intuitionistic Fuzzy dominance matrix R on a set of alternatives X is a Intuitionistic Fuzzy on the product set ExE.It is characterized by a membership function μ:E x E → [0 , 1],ϒ:E x E → [0 , 1],When cardinality of X is small,the dominance matrix may be conveniently represented by n x n matrix, R= (r_{ij}),r_{ij}= μ (e_i,e_j) for all i,j∈{1,2…..,k}i≠j interpreted as the dominance degree or intensity of the expert e_i over $e_j$on the set of (x_i,c_j) for all i ∈{1,2…..,m},j∈{1,2…..,n}where r_{ij} =0 indicates that $e_i$is preferred to e_j,r_{ij}<0 indicates that $e_j$is preferred to e_i.Dominance degree of expert e_i over e_j.on the set of (x_i,c_j) for all i ∈{1,2…..,m},j∈{1,2…..,n} can be calculated as $r_{ij}^{A,B}=d_{ij}^{A}-d_{ij}^{B}$,i ∈1≤i≤m,j ∈1≤j≤n,A,B∈E,Where $d_{ij}^{A}$and d_{ij}^{B} are intuitionistic fuzzy decision matrices of experts A and B respectively.

4.2 Algorithm

Step 1: Intuitionistic fuzzy soft decision matrices of two experts e_1 ,e_2 are constructed and taken as input for a multi attributes decision making problem with alternatives X= {x_1,x_2,x_3……x_m}m≥ 2 and n attributes C={c_1,c_2,c_3….c_n},n≥ 2 a fuzzy decision matrix D=(d_{ij}) can be represented as

$$D=[d_{ij}]_{m\times n} = \begin{bmatrix} d_{11} & d_{12} & \dots & d_{1n} \\ d_{21} & d_{22} & \dots & d_{2n} \\ \dots & \dots & \dots & \dots \\ d_{m1} & d_{m2} & \dots & d_{mn} \end{bmatrix}, d_{ij} \in [0,1]$$

Step 2: Intuitionistic fuzzy dominance matrix R is constructed based on the subtraction of fuzzy decision matrix D of individual experts.

$$R=[r_{ij}]_{m\times n} = \begin{bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ \dots & \dots & \dots & \dots \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{bmatrix}, r_{ij} \in [-1,1]$$

Step 3: Choice value ch^i of the i^{th}alternative is calculated by adding all dominance value corresponding to that alternative $\sum_{j=1}^{n}(r_{ij})$, i ∈{1,2…..,m}.

Step 4: If $ch^i = \sum_i Max\, ch^i$, for all i ∈{1,2…..,m}, alternative $x_k$is selected.

Step 5: If k has more than one value, then any one of x_k may be chosen.

5.Case study

Let U= $\{u_1,u_2,u_3,u_4\}$ be the set of four persons related with digestive problem by the expert X,Yand Z. The four persons have been went to a hospital for medical treatment and all the four persons were identified by digestive problem and in this case all the persons were given proper medical treatment and all of them have been cured , but particularly one person was cured in an extraordinary manner by getting maximum score point.Let $E=\{e_1,e_2,e_3,e_4\}$ be the set of parameters for vomiting ,diarrhea ,constipation, and indigestion identifying the person affected by digestive problem.

The Intuitionistic fuzzy soft decision matrices of X, Y and Z

$$X= \begin{matrix} \\ u_1 \\ u_2 \\ u_3 \\ u_4 \end{matrix} \begin{matrix} e_1 & e_2 & e_3 & e_4 \\ \end{matrix} \begin{bmatrix} (0.6,0.2) & (0.7,0.2) & (0.0,0.3) & (0.3,0.2) \\ (0.5,0.4) & (0.4,0.7) & (0.0,0.3) & (0.5,0.3) \\ (0.7,0.2) & (0.4,0.3) & (0.1,0.4) & (0.0,0.2) \\ (0.6,0.3) & (0.4,0.2) & (0.2,0.3) & (0.6,0.7) \end{bmatrix}$$

$$Y= \begin{matrix} \\ u_1 \\ u_2 \\ u_3 \\ u_4 \end{matrix} \begin{matrix} e_1 & e_2 & e_3 & e_4 \\ \end{matrix} \begin{bmatrix} (0.6,0.2) & (0.2,0.6) & (0.6,0.3) & (0.8,0.2) \\ (0.1,0.8) & (0.8,0.1) & (0.6,0.3) & (0.2,0.7) \\ (0.5,0.5) & (0.7,0.2) & (0.5,0.4) & (0.0,0.3) \\ (0.1,0.7) & (0.3,0.4) & (0.7,0.6) & (0.6,0.3) \end{bmatrix}$$

$$Z= \begin{matrix} \\ u_1 \\ u_2 \\ u_3 \\ u_4 \end{matrix} \begin{matrix} e_1 & e_2 & e_3 & e_4 \\ \end{matrix} \begin{bmatrix} (0.5,0.4) & (0.1,0.2) & (0.7,0.5) & (0.4,0.2) \\ (0.6,0.2) & (0.3,0.3) & (0.7,0.2) & (0.5,0.7) \\ (0.5,0.5) & (0.3,0.7) & (0.1,0.5) & (0.0,0.5) \\ (0.6,0.1) & (0.4,0.3) & (0.2,0.2) & (0.6,0.2) \end{bmatrix}$$

The Intuitionistic fuzzy dominance matrices of X and Y are calculated as

$$\begin{array}{c} \\ u_1 \\ u_2 \\ u_3 \\ u_4 \end{array}\begin{array}{c} \begin{array}{cccc} e_1 & e_2 & e_3 & e_4 \end{array} \\ \begin{bmatrix} (0.6,0.2) & (0.2,0.6) & (0.0,0.3) & (0.3,0.2) \\ (0.1,0.8) & (0.4,0.7) & (0.0,0.4) & (0.2,0.7) \\ (0.5,0.5) & (0.4,0.3) & (0.1,0.4) & (0.0,0.3) \\ (0.1,0.7) & (0.3,0.4) & (0.2,0.6) & (0.6,0.3) \end{bmatrix} \end{array}$$

The Intuitionistic fuzzy dominance matrices of Y and Z are calculated as

$$\begin{array}{c} \\ u_1 \\ u_2 \\ u_3 \\ u_4 \end{array}\begin{array}{c} \begin{array}{cccc} e_1 & e_2 & e_3 & e_4 \end{array} \\ \begin{bmatrix} (0.5,0.4) & (0.1,0.6) & (0.6,0.5) & (0.4,0.2) \\ (0.1,0.8) & (0.3,0.3) & (0.6,0.4) & (0.2,0.7) \\ (0.5,0.5) & (0.3,0.7) & (0.1,0.4) & (0.0,0.5) \\ (0.1,0.7) & (0.3,0.4) & (0.2,0.6) & (0.6,0.2) \end{bmatrix} \end{array}$$

The Intuitionistic fuzzy dominance matrices of Z and X are calculated as

$$\begin{array}{c} \\ u_1 \\ u_2 \\ u_3 \\ u_4 \end{array}\begin{array}{c} \begin{array}{cccc} e_1 & e_2 & e_3 & e_4 \end{array} \\ \begin{bmatrix} (0.5,0.4) & (0.1,0.2) & (0.0,0.5) & (0.3,0.2) \\ (0.5,0.4) & (0.3,0.7) & (0.0,0.4) & (0.5,0.7) \\ (0.5,0.5) & (0.3,0.7) & (0.1,0.5) & (0.0,0.5) \\ (0.6,0.3) & (0.4,0.3) & (0.2,0.3) & (0.6,0.7) \end{bmatrix} \end{array}$$

Aggregated IFDM

U /E	e_1	e_2	e_3	e_4	Choice parameter	Choice value
u_1	(0.6,0.4)	(0.2,0.6)	(0.6,0.5)	(0.4,0.2)	(0.6,0.5)	1.1
u_2	(0.5,0.8)	(0.4,0.7)	(0.6,0.4)	(0.5,0.7)	(0.6,0.4)	1.0
u_3	(0.5,0.5)	(0.4,0.7)	(0.1,0.5)	(0.0,0.5)	(0.0,0.5)	0.5
u_4	(0.6,0.7)	(0.4,0.4)	(0.2,0.6)	(0.6,0.7)	(0.6,0.7)	1.3

In this study, since the maximum choice value 1.3 scored by u_4 and the patient was highly cured and the decision was in favour of patient u_4 who is observing as maximum curable person.

6. Conclusion

The Intuitionistic fuzzy dominance matrices are mainly useful in such situations where decision makers are able to express their opinions about all the attributes in terms of fuzzy value. Insimple way,when there is no missing or unknown information,Intuitionistic fuzzy dominance matrices is proved to be more effective. This study has introduced Intuitionistic fuzzy dominance matrices for solving multi attribute decision making problems in uncertain environment.We utilized one of them through a new solution procedure to solve real life decision problem which will involve more number of decision maker.

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