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A Study of Periyar Philosophy on Self- Respect using Induced Fuzzy Cognitive Maps (IFCMS)

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Abstract - The world self-Respect (Suyamariyathai) used by ThanthaiPeriyar had a great impact over the history of Tamilnadu. In this paper, we analyzed how the Periyar's philosophies on self-Respect have influenced the society using Induced Fuzzy Cognitive maps (IFCMs).

Key words: ThanthaiPeriyar, Self-Respect, FCM and IFCM.

I. INTRODUCTION

ThanthaiPeriyar E.V Ramasamy (1897-1973) was a unique social reformer and humanist of twentieth century. His Philosophy was all men and women should live with dignity and have equal opportunity to develop their physical, mental and moral faculties. It was in this context, he formed the self – respect movement in 1925. It carried out on a vigorous and ceaseless propagation against ridiculous and harmful superstitions, traditions customs and habits [5, 8].

The current study examines Periyar's view on self- respect and how it influenced the society using Induced Fuzzy Cognitive maps (IFCMs). Political scientist R.Axelord [1] used cognitive maps (FCMs) for modeling decision making process associated with political and social system. Then B.Kosko [2, 3] introduced Fuzzy Cognitive maps (FCM) by enhancing the power of cognitive maps with fuzzy values for the concept of the cognitive map and fuzzy degree of interrelationships between concepts. FCM can successfully represented knowledge and human experience, it introduces the concept to represent the essential elements and the cause and effect relationships among the concepts to model the behavior of any system. T.Pathinathanet.al [4] introduced induced concept to bring out much stronger relationship among the attributes.

In the current study, section two gives the preliminaries of Fuzzy Cognitive Maps. Section three explains the method of finding hidden pattern in Induced FCM. Section four gives the adaptation of the problem to IFCM and section five gives the conclusion based on our study.

II. PRELIMINARIES

Fuzzy Cognitive Maps (FCMs) are more applicable when the data in the first Place is an unsupervised one. The FCMs work on the opinion of experts. FCMs model the world as a collection of classes and causal relations between classes [6,7].

a. Definition:

A FCMs is a directed graph with concepts like policies, events etc, as nodes and causalities as edges. It represents causal relationship between concepts.

b. Definition:
When the nodes of the FCM are fuzzy sets then they are called as fuzzy nodes.

c. Definition:
FCMs with edge weights or causalities from the set {-1, 0, 1} are called simple FCMs

d. Definition:
Let C_i andC_j denote the two nodes of the FCM. The directed edge from C_i to $C_j$denote the causality of $C_i$on $C_j$called connections. Every edge in the NCM is weighted with a number in the set {-1, 0, 1}. Let e_{ij}be the weight of the directed edgeC_iC_j, $e_{ij} \in$ {.1, 0, 1}. e_{ij} = 0 if C_i does not have any effect on C_j, e_{ij} = 1 if increase (or decrease) in C_i causes increase (or decreases) in C_j. e_{ij} =1 if increase (or decrease) in $C_i$causes decrease (or increase) in C_j.

e. Definition:
Let $C_1,C_2,...,C_n$be nodes of a FCM. Let the adjacencymatrix E be defined as E=(e_{ij}) where e_{ij} is the weight of the directed edge C_iC_j, where $e_{ij} \in$ {.1, 0, }.

f. Definition:
Let $C_1,C_2,...,C_n$be the nodes of the FCM. Let $A=\{a_1, a_2...a_n\}$, where $a_i \in \{0, 1, \}$. A is called the instantaneous state vector and it denotes the on-off state position of the node at an instant
a_i = 0 if a_i is off (no effect)

a_i = 1 if a_i is on (has effect) for$i=1,2..n$

g. Definition:
Let $C_1,C_2,...,C_n$be the nodes of the FCM. Let $\overrightarrow{C_1C_2}, \overrightarrow{C_2C_3}...\overrightarrow{C_iC_j}$ be the edges of the FCM. Then the edges form a directed cycle. An FCM is said to be cyclic if it possesses a directed cyclic. An FCM is said to be acyclic if it does not possess any directed cycle.

h. Definition:
An FCM with cycles is said to have a feedback. When there is a feedback in the FCM i.e. when the causal relations flow through a cycle in a revolutionary manner the FCM is called a dynamical system.

i. Definition:
Let $\overrightarrow{C_1C_2}, \overrightarrow{C_2C_3}...\overrightarrow{C_{n-1}C_n}$ be cycle, when C_i is switched on and if the causality flow through the edges of a cycle and if it again

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causes C_i, we say that the dynamical system goes round and round. This is true for any node C_i, for $i = 1, 2...n$ the equilibrium state for this dynamical system is called the hidden pattern.

j. Definition:
If the equilibrium state of a dynamical system is a unique state vector, then it is called a fixed point. Consider the FCM with $C_1, C_2, ..., C_9$ as nodes. For example let us start the dynamical system by switching on C_1 Let us assume that the NCM settles down with C_1 and C_n on, i.e. the state vector remain as (1, 0 ,., 1) this state vector (1,0,., 0, 1) is called the fixed point.

1.11Definition:

If the FCM settles with a state vector repeating in the form $A_1 \to A_2 \to \ldots A_i \to A_1$ then this equilibrium is called a limit cycle of the FCM.

III. METHOD OF DETERMINING HIDDEN PATTERN

Let $\{C_1, C_2, ..., C_n\}$ be the nodes of an FCM, with feedback. Let E be the associated adjacency matrix. Let us find the hidden pattern when C_1 is switched on when an input is given as the vector A_1 = (1, 0, 0,., 0), the data should pass through the matrix E, this is done by multiplying A1 by the matrix E. Let $A_1E = \{a_1, a_2 \ldots, a_3\}$ with the threshold operation that is by replacing ai by 1 if $a_i > k$ and a_i by 0 if $a_i < k < (k - a$ suitable positive integer). We update the resulting concept, the concept C_1 is included in the updated vector by making the first coordinate as 1 in the resulting vector. Suppose $A_2E \to A_2$ then consider A_2E and repeat the same procedure. This procedure is repeated till we get a limit cycle or a fixed point.

a. Method of finding the hidden pattern in Induced FCM
Let $C_1, C_2, ..., C_n$ be the nodes of a FCM with feedback. Let M be the adjacency matrix. Let us a hidden pattern when C_1 is switched on. We pass the state vector C1 through the Connection matrix M. A particular attribute, say, C_1 is kept in ON state and all other components are kept in OFF state. Let ON state and other values to OFF state with 1 and 0 respectively. We make C_1M yields, C_1'. To convert to signal function, choose the first two highest values to each component of C_1' vector pass through M repeatedly for each positive entry 1 and we use the symbol (≈). Then choose that vector which contains the maximum number of 1's. That which causes maximum attributes to ON state and call it, say, C_2.

Supposing that there are two vectors with maximum number of 1's are inON state, we choose the first vector. Repeat the same procedure for C_2 until we get a fixed point or a limit cycle. We do this process to give due importance to each vector separately as one vector induces another or many more vectors into ON state. We get the hidden pattern either from the limit cycle or from the fixed point. We observe a pattern that leads one cause to another and may end up in one vector or a cycle. Next we choose the vector by keeping the second Component in ON state and repeat the same to get another cycle and it is done for all the vectors separately. We observe the hidden pattern of some vectors found in all or in many cases. Inference from this hidden pattern summarizes or highlights the causes.

IV. ADAPTATION OF THE PROBLEM

The following attributes related to Periyar and self-respect was given by an expert who is a Periyarist.

c_1 - Racial Consciousness
c_2 - Rationalism
c_3 - Humanism
c_4 - Scientific thinking
c_5 - castesim / religion
c_6 - Women's right

We formed a directed graph based on expert opinion.

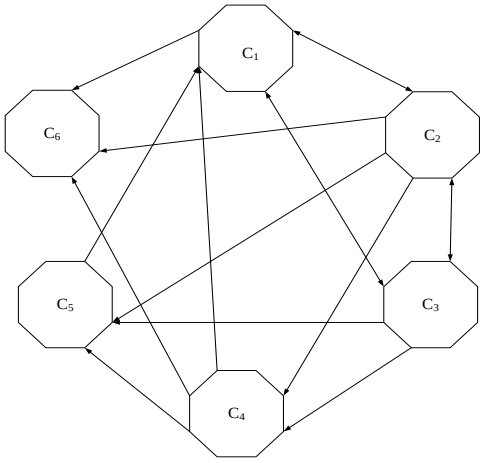

Fig-1

The related connection matrix M is as follows

$$M = \begin{array}{c} \\ C_1 \\ C_2 \\ C_3 \\ C_4 \\ C_5 \\ C_6 \end{array} \begin{array}{c} \begin{array}{cccccc} C_1 & C_2 & C_3 & C_4 & C_5 & C_6 \end{array} \\ \begin{bmatrix} 0 & 1 & 1 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 & 1 & 1 \\ 1 & 1 & 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{bmatrix} \end{array}$$

Let c_1 = (1 0 0 0 0 0)

c_1M = (0 1 1 1 1 1)

(0 1 1 1 1 1) M^T = (5 4 4 3 0 1) ↪ (1 1 1 1 01) = c_1'

c_1'M (1 0 0 0 0 0)M = (0 1 1 1 1 1)

(0 1 1 1 1 1) M^T = (5 4 4 4 0 1) ↪ (1 1 1 1 0 1)

(0 1 0 0 0 0)M = (1 0 1 1 1 1)

(1 0 1 1 1 1) M^T = (4 5 4 3 1 1) ↪(1 1 1 1 1 1) = c_2'

(0 0 1 0 0 0)M = (1 1 0 1 1 1)

(1 1 0 1 1 1) M^T = (4 4 5 4 1 0) ↪ (1 1 1 1 1 0)

(0 0 0 1 0 0)M = (1 1 0 0 1 1)

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(1 1 0 0 1 1) M^T = (3 3 4 4 1 0) ↪(1 1 1 1 1 0)
(0 0 0 0 0 1)M = (0 0 1 0 0 0)
(0 0 1 0 0 0) M^T = (1 1 0 0 0 1)
Now let c_1 = (0 1 0 0 0 0)
c_1 M = (1 0 1 1 1 1)
(1 0 1 1 1 1) M^T = (4 5 4 3 1 1)↪ (1 1 1 1 1 1) = c_1'
c_1'M (1 0 0 0 0 0)M = (0 1 1 1 1 1)
(0 1 1 1 1 1) M^T = (5 4 4 4 0 1) ↪ (1 1 1 1 0 1)
(0 1 0 0 0 0)M = (1 0 1 1 1 1)
(1 0 1 1 1 1) M^T = (4 5 4 3 1 1) ↪(1 1 1 1 1 1) = c_2'
(0 0 1 0 0 0)M = (1 1 0 1 1 1)
(1 1 0 1 1 1) M^T = (4 4 5 4 1 0) ↪(1 1 1 1 10)
(0 0 0 1 0 0)M = (1 1 0 0 1 1)
(1 1 0 0 1 1) M^T = (3 3 4 4 1 0) ↪(1 1 1 1 1 0)
(0 0 0 0 1 0)M = (1 0 0 0 0 0)
(1 0 0 0 0 0) M^T = (0 1 1 1 1 0)
(0 0 0 0 0 1)M = (0 0 1 0 0 0
(0 0 1 0 0 0) M^T = (1 1 0 0 0 1)

It is highlighting that when we keep node C_1 ON state, C_2 induces and make the all the node ON State. i.e. Rationalism induces all nodes ON states.

V. CONCLUSION

From our study, we see that ThanthaiPeriyar has given much importance to rationalism. In his newspaper kudiyarsu dated 05. 10.1935, he writes "What is rationalism? Human being's creative energy, emotional thinking are said to be knowledge. That ability of thinking in deepest manner can be called as rationalism ''. In kudiyarsu dated 26. 05.1930, ThanthaiPeriyar points out castesim and denial of women's rights are two things against rationalism. Recently in Deccan chronicle newspaper dated 16 July 2012, a news item appeared with caption "Anti Inter – caste marriage campaign begins". It reads as "Entering schools and colleges to the conduct campaigns against inter-caste marriage was among the six resolutions passed by KonguVellalarPeravi , a Gounder caste group on Sunday in Namakkal''. This shows that seeds sown by Thanthaiperiyar have started to sprout and it could be assessed from the current scenario in the society.

REFERENCES

[1] Axelrod, R.(1976). Structure of decision: The cognitive maps of political elites. Princeton, NJ: Princeton university press.
[2] Kosco,B."FuzzyCognitive Maps" International journal of man-machine studies, January, (1986), 62-75
[3] Kosco, B., Neural Networks and Fuzzy Systems: A Dynamical Systems Approach to Machine Intelligence, Prentice Hall of India, 1997
[4] Pathinathan et al"On tension and Cause for School Dropouts- An Induced linked Fuzzy Relational Mapping (ILFRM) Analysis"*JCIS-2006 Proceedings*
[5] Rathinagiri ,R.,ThanthaiPeriyar life and service , PeriyarIyakkam Publications.
[6] VasanthaKandasamy W.B and SmarandacheFlorentin "Analysis of social aspects of migrantlaborers living with HIV/AIDS using Fuzzy Theory and Neutrosophic Cognitive Maps", Xiquan, Phoenix (2004)
[7] VasanthaKandasamy W.B and SmarandacheFlorentin"Fuzzy Cognitive Maps and Neutrosophic Cognitive Maps", Xiquan, Phoenix (2003)
www.thanthaiperiyar.org