

# IMPACT OF SOCIAL MEDIA ON YOUTH ACTIVISM AND NATION BUILDING IN PERVASIVE SOCIAL COMPUTING USING NEUTROSOPHIC COGNITIVE MAPS (NCMS)

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## **Abstract**

*Youth is the major assets of a nation, we need to channel their energy accordingly and dissipate it appropriately for the benefits of a nation and humanity as a whole. Social media has how become indispensable in our societies. Most of the major social media are predominated by the youth, exploiting it for one purpose or the other. In this paper we analyzed how youth could constructively, the role of social media and it's how it build a nation and achieve a promising future not only for themselves but equality for the upcoming generations using Neutrosophic cognitive maps. This paper has four sections. In section one, we give an introduction about Pervasive social Media, Section two we recall the definition of Neutrosophic Cognitive Maps (NCMs) Section three is deals with the methods of finding the hidden pattern in NCMs and analysis of Features or Characters of Youth and Youth Activism. In final section we give the conclusion based on our study.*

**Keywords:** Nation building, Neutrosophic Cognitive Maps (NCMs), Pervasive Social Computing, social media, Youth activism.

## **1. Introduction**

Pervasive social computing is a novel collective paradigm, its derived from pervasive computing, social media, social networking, social signal processing, etc., pervasive social computing as an integrated computing environment, which promises to augment five facets of human intelligence; physical environment awareness, behavior awareness, community awareness, interaction awareness and content awareness [11], Using social media websites is among the most common activity of today's youth. Any websites that allows social interaction is considered a social media site including social networking sites such as Face book, MySpace, and Twitter, gaming sites, YouTube[9]. Nowadays most of the younger's using this kind of websites very much. In India youths age 15-24 constitute more than 40% around 460 millions youth are there [18].

### **1.1 Who are the Youth?**

Youth, according to lexicographers [13], means the period of being young, especially the period between being a child and being fully grown or young men and women

considered as a group. To economists as observes Adeyemo [4], 'a youth is a person who is still in his productive years'. However, for our purpose, a youth can be defined as a person who is still in his/her formative years, undergoing character modeling, personality development and sometimes receiving training that has to do with human capital development. As we further observed, he is therefore influenced for good or bad, by whatever transpires in and around his environment since he/she learns through observation and experience. Youth is the only time to think and decide on a great course. But it is dreary to have to alter one's whole life in age, the time past and the strength gone. A young man... determined and willing will find a way or make one.

### **1.2 What is Youth Activism?**

The above question is apposite and germane to our study as it would guide us in discerning how it could be tailored towards nation building and bettering the lots of youth and humanity in general. The term has been variously defined. For instance, Wikipedia defines it as, 'when youth voice is engaged in

community organizing for social change'; this definition is particularly relevant to the present discussion. Youth activism therefore takes place according to the given definition, when young people are involved in planning researching, teaching, evaluating, decision-making, social working, advocating and leading actions on environmental issues, social justice, human rights campaign, supporting or opposing issues like abortion, anti-racism, anti homophobia, anti-homosexual, war or ethnic cleansing, etc, all with particular reference to bringing about a social change. Students, it has been observed by many researchers to be at the forefront of youth activism especially through student unionism. Youth activism is considered by many people to be negative, counter-productive and therefore conjure an odious impression. In this study however, the focus is on how to make the best out of their activism.

### 1.3 What is Social Media?

Social media are said to be a general name for websites that permit users to share content, media, photographs etc. The common ones are the famous networking sites like MySpace, Friendster, Face book, YouTube, Flickr, Photo bucket, etc. They are therefore described as media for social interactions which employs highly accessible and large communication apparatus. It is a web based and mobile technology which allows communication to become active and interactive dialogue. According to Kaplan et al, it is a group of Internet-based applications that builds on the ideological and technological foundations of Web 2.0 which as he says, allow the creation and exchange of user-generated content[6\*]. Some of the advantages of social media or the characteristics that make it distinct from other media-traditional/industrial electronic and print are:

1. They are easily accessible and relatively cheaper even sometimes free.
2. It allows everyone, including individuals to publish and access information unlike the

industrial media for which vital resources are required for publishing information.

3. It is a decentralized media with minimum hierarchy which is distinguished by multiple points of production and uses.
4. It requires less specialized skill and technical training, once access is gained into it, it could be operated or used by anybody with less difficulty.
5. It guarantees prompt and immediate response. However, since a good number of traditional/industrial media have begun to use similar facilities, this may not continue to be a distinctive feature of social media for a long time.
6. Social media unlike industrial/traditional one is ductile and malleable. Errors in information could be corrected with immediate effect by way of comments and editing.

### 1.4 Nation Building

Nation-building could be described as the process or the procedure of putting in place all it requires for a state or rather a nation state to stand on its own as independent autonomous state. Such process includes training and retraining or at best human capital development aimed at harnessing or exploiting the available resources in the country. In most cases, the training is majorly focused on areas of critical needs of a nation at a particular time. For instance, a nation that has just been independent may focus on administrative, professional, defense, and economic training among others. In a nutshell, nation-building means conscious, deliberated and concerted efforts made by people to address the fundamental needs or issues of their nationhood. Youths should be trained to respect the law of their land and be law abiding. They should take cognizance of what Archridamus, the King of ancient Sparta says while exhorting his subjects; 'We are wise because we are not so highly educated as to look down upon our laws and customs. Observes Emile Durkein(the French Sociologist): *"A nation can be maintained only if, between the state and the individual, there is intercalated a whole series of*

*secondary groups near enough to the individual to attract them strongly in their sphere of actions and drag them in this way, into the general torrent of social life". Youth activism could therefore, be tailored towards nation building based on the observation made by Durkein.*

## 2. Basic Notation and Definitions

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.

### 2.1 Definition

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

### 2.2 Definition

When the nodes of the NCM are fuzzy sets then they are called as fuzzy nodes.

### 2.3 Definition

NCMs with edge weights or causalities from the set  $\{-1, 0, 1, I\}$  are called simple NCMs.

### 2.4 Definition

Let  $C_i$  and  $C_j$  denote the two nodes of the NCM. The directed edge from  $C_i$  to  $C_j$  denotes the causality of  $C_i$  on  $C_j$  called connections. Every edge in the NCM is weighted with a number in the set  $\{-1, 0, 1, I\}$ . Let  $e_{ij}$  be the weight of the directed edge  $C_iC_j$ ,  $e_{ij} \in \{-1, 0, 1, I\}$ .  $e_{ij} = 0$  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  $C_j$ .  $e_{ij} = I$  if the relation or effect of  $C_i$  on  $C_j$  is an indeterminate.

### 2.5 Definition

Let  $C_1, C_2, \dots, C_n$  be nodes of a NCM. Let the neutrosophic matrix  $N(E)$  be defined as  $N(E)=(e_{ij})$  where  $e_{ij}$  is the weight of the directed edge  $C_iC_j$ , where  $e_{ij} \in \{-1, 0, 1, I\}$ .  $N(E)$  is called the neutrosophic adjacency matrix of the NCM.

## 2.6 Definition

Let  $C_1, C_2, \dots, C_n$  be the nodes of an NCM.  $A = (a_1, a_2, \dots, a_n)$  where  $a_i \in \{0, 1, I\}$ .  $A$  is called the instantaneous state neutrosophic vector and it denotes the ON-OFF-INDETERMINATE state position of the node at an instant.

$$a_i = 0 \text{ if } a_i \text{ is OFF (no effect)}$$

$$a_i = 1 \text{ if } a_i \text{ is ON (has effect)}$$

$a_i = I$  if  $a_i$  is INDETERMINATE (effect cannot be determined) for  $i = 1, 2, \dots, n$ .

## 2.7 Definition

Let  $C_1, C_2, \dots, C_n$  be the nodes of and FCM. Let  $\overrightarrow{C_1C_2}, \overrightarrow{C_2C_3}, \overrightarrow{C_3C_4}, \dots, \overrightarrow{C_iC_j}$  be the edges of the NCM. Then the edges form a directed cycle. An NCM is said to be cyclic if it possesses a directed cyclic. An NCM is said to be acyclic if it does not possess any directed cycle.

## 2.8 Definition

An NCM with cycles is said to have a feedback.

## 2.9 Definition

When there is a feedback in an NCM, i.e, when the causal relations flow through a cycle in a revolutionary manner the NCM is called a dynamical system.

## 2.10 Definition

Let  $\overrightarrow{C_1C_2}, \overrightarrow{C_2C_3}, \overrightarrow{C_3C_4}, \dots, \overrightarrow{C_{n-1}C_n}$  be a cycle. When  $C_i$  is switched on and if the causality flows through the edges of a cycle and if it again causes  $C_i$ , we say that the dynamical system goes round and round. This is true for any node  $C_i$  for  $i = 1, 2, \dots, n$ . The equilibrium state for this dynamical system is called the hidden pattern.

## 2.11 Definition

If the equilibrium state of a dynamical system is a unique state vector, then it is called a fixed point. Consider a NCM with  $C_1, C_2, \dots, C_n$  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  $(1, 0, 0, \dots, 1)$  this neutrosophic stage vector  $(1, 0, \dots, 0, 1)$  is called fixed point.

## 2.12 Definition

If the NCM settles down with a neutrosophic

state vector repeating in the form  $A_1 \rightarrow A_2 \rightarrow \dots \rightarrow A_i \rightarrow A_1$  then this equilibrium is called a limit cycle of the NCM.

**2.13 Definition**

Finite number of NCMs can be combined together to produce the point effect of all the NCMs. If  $N(E_1), N(E_2), \dots, N(E_p)$  be the neutrosophic adjacency matrices of a NCM with nodes  $C_1, C_2, \dots, C_n$  then the combined NCM is got by adding all the neutrosophic adjacency matrices  $N(E_1), N(E_2), \dots, N(E_p)$ . We denote the combined NCMs adjacency neutrosophic matrix by  $N(E) = N(E_1) + N(E_2) + \dots + N(E_p)$ .

**3. Method of determining the hidden pattern**

Let  $C_1, C_2, \dots, C_n$  be the nodes of an NCM, 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  $A_1 = (1, 0, \dots, 0)$ , the data should pass through the neutrosophic matrix  $N(E)$ . This is done by multiplying  $A_1$  by the matrix  $N(E)$ . Let  $A_1 N(E) = (a_1, a_2, \dots, a_n)$  with the threshold operation that is by replacing  $a_i$  by 1 if  $a_i > k$  and  $a_i$  by 0 if  $a_i < k$  ( $k - a$  is a suitable positive integer) and  $a_i$  by  $I$  if  $a_i$  is not 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  $A_1 N(E) \rightarrow A_2$  then consider  $A_2 N(E)$  and repeat the same procedure. This procedure is repeated till we get a limit cycle or a fixed point.

**3.1 Features or Characteristics of Youth**

Youth exhibits certain features that the peculiar to their age bracket. These characteristics are paramount to this study in order to know why youths do certain things and behave in a particular way. Although, the ones given below are not exhaustive, however, they constitute an eye opener to their frame of mind or more appropriately their psychology.

1. Youthful Exuberance
2. Ambitious/Self Actualization
3. Energy, Vigour and Agility
4. Commitment

5. Desire to be Recognized and be Popular
6. Social Activism
7. Emotion
8. Youth Driven Activism
9. Less Social Responsibility
10. Youth-Led Community Organizations.

We just use the basic concept of NCM in our analysis of psychological, socio economic problem of characters of youth & youth activism. To make the reader compare and comprehend the effect of NCM in the place of FCM, we first analyzed using the experts opinion giving them a possibility namely it is not essential to relate or not relate two concepts/nodes and they can also use the symbol  $I$  to denote that they are not able to determine any form of relation between a pair of nodes i.e., at that time the relation between the nodes in an indeterminate.

According to the expert, what he spelt out the attributes are now asked to give the opinion suggesting that he has the opinion to state his inability to associate two concept of nodes such things will be denoted by the letter  $I$  meaning the relation is an indeterminate.

Thus we have formed the Neutrosophic directed graph which is given by the experts.

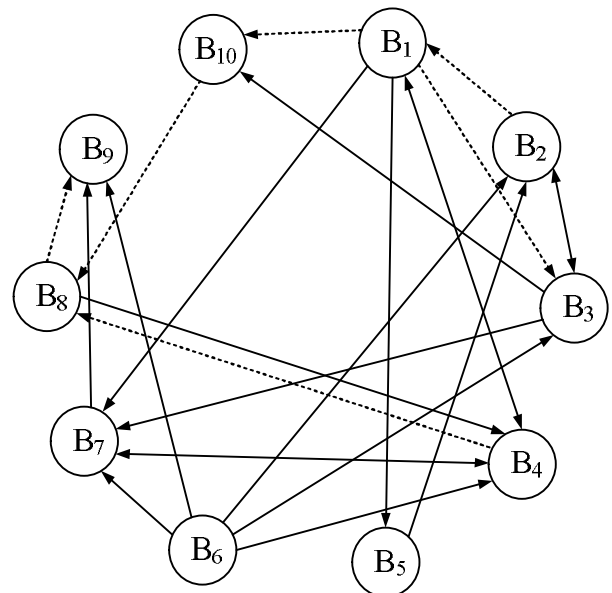


Fig. 1

Let the corresponding Neutrosophic connection matrix of the Neutrosophic directed graph is given by  $N(E)$ .

$$\begin{matrix}
 & B_1 & B_2 & B_3 & B_4 & B_5 & B_6 & B_7 & B_8 & B_9 & B_{10} \\
 B_1 & \left[ \begin{array}{cccccccccc}
 0 & 0 & 1 & 1 & 1 & 0 & 1 & 0 & 0 & 1 \\
 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\
 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 \\
 1 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 1 \\
 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 1 & 1 & 1 & 0 & 0 & 1 & 0 & 1 & 0 \\
 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\
 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 & 1 & 0 \\
 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0
 \end{array} \right]
 \end{matrix}$$

Let  $R = (0\ 1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0)$  be Neutrosophic state vector in which only the node  $A_2$ , i.e., the types of ambitious/Self Actualization is in on state and all other nodes are in the off state.  $R$  is passed into the above Neutrosophic connection matrix  $N(E)$

$$\begin{aligned}
 RN(E) &\hookrightarrow (1\ 1\ 0\ 0\ 0\ 1\ 0\ 0\ 0\ 0) = R_1 \\
 R_1N(E) &\hookrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 1\ 1) = R_2 \\
 R_2N(E) &\hookrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 1\ 1) = R_3 \\
 R_3N(E) &\hookrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 1\ 1) = R_4 = R_3
 \end{aligned}$$

Here the symbol  $\hookrightarrow$  denotes that at every stage the resultant vector has been updated and threshold.

When we consider the attribute ambitious/Self Actualization is in the ON state all other states are Youthful Exuberance, Energy, Vigour and Agility, Commitment, Desire to be Recognized and be Popular, Social Activism, Less Social Responsibility, Youth-Led Community Organizations are ON except the attribute Youth Driven Activism.

Now Let us consider the state vector  $S = (0\ 0\ 0\ 0\ 0\ 1\ 0\ 0\ 0\ 0)$  i.e., Social activism is in the ON state and all other vectors are in the OFF state. To study the effect of  $S$  on the Neutrosophic dynamical system  $N(E)$ .

$$\begin{aligned}
 SN(E) &\hookrightarrow (0\ 1\ 1\ 1\ 0\ 0\ 1\ 0\ 0\ 0) = S_1 \\
 S_1N(E) &\hookrightarrow (1\ 1\ 1\ 1\ 0\ 1\ 1\ 0\ 0\ 1) = S_2 \\
 S_2N(E) &\hookrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 1) = S_3 \\
 S_3N(E) &\hookrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 1) = S_4 \\
 S_4N(E) &\hookrightarrow (1\ 1\ 1\ 1\ 1\ 1\ 1\ 0\ 0\ 1) = S_5 = S_4
 \end{aligned}$$

$S_4$  is a fixed point. Thus the hidden pattern of the Neutrosophic dynamical system is a fixed

point, the attribute Social Action makes all the states are ON except  $A_8$ . i.e., attribute Social Activism is ON, Youthful Exuberance, Ambitious/Self Actualization, Energy, Vigour and Agility, Commitment, Desire to be Recognized and be Popular, Youth-Led Community Organizations are ON except Youth Driven Activism, there is some in determinant between Social Activism and Youth Driven Activism.

**4.Conclusion**

We analyzed that, the Contribution of youth activism to the nation building using NCMs, based on that we derived the following recommendations.

- Youth are vital resources of a nation; hence efforts should be geared towards tapping them in order to guard against it being used for destructive purpose.
- Nation should ensure that rules of laws are facilitated, respected and followed.
- Special attention should be paid to mentoring in the training of youth since they are always looking for role models.
- Youth activism is nothing but the peaceful co-existence, moral and spiritual training, social integration, health and physical fitness as well as those geared towards leadership skills and nation building should not only be encouraged but equally facilitated.
- Youths should be properly engaged in order to dissipate their energy for the greater glory of their society and humanity as a whole.
- Parents, teachers and governments should provide avenues for youths to develop their latent potentials.
- They should be given civic education or training.
- The institution of family should be rejuvenated and repositioned to play its vital role in the society.

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