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Prevailing Conditions Loom to Secure Appropriate Fitting Of n- HUB In Linear, Recurring, Habitual, And Non Habitual Network

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ABSTRACT

A network is, informally, a collection of nodes connected by a collection of connections. A node in a network is a location where two or more branches covered. One branch may occasionally be the sole one to connect to the other node. A branch is a line segment that connects two nodes. Deduction of fixing hub point in network is the process of network administration, so that only authorized parties may fix this in appropriate manner. Every day, more digital information is being transmitted and shared in online. The quantity a result of the weaknesses in the network and software, the number of security assaults/threats has also increased. The proposed research, a novel method to capture the data transmission and fixing of hub substation technique by network theoretical manner using edge adjacency and edge non adjacency matrix method is proposed. To perform substitution, first-level encryption uses binary values. As the second level of calculations, through logical manner of fitting of hub is utilized to achieve permutation on matrix folding technique in all ways.

Keywords: *Adjacent , Cyclic, Input, Linear, Network , Node, Non Adjacent, Output, Wheel*

INTRODUCTION

Let Y (s, t) be a network with $s=|V|$ denote the number of vertices and $t=|E|$ is set of connections between vertices of a network Y, respectively. All networks considered as finite and Undirected , without loops and multiple edges.

Preliminary Notes

In a linear network $L(T)$ of network has the connections of network as its nodes which are immediate connection in $L(T)$ if and only if the corresponding connections are immediate connection in network. We call the complement of the linear network $L(T)$ as the Non Adjacent Connected Network (NACN) of network. This Concept was observed from Chartrand.G. Hevia.H., Jarrett E.B., and Schultz's., in [1] as a network.The Non Adjacent Connected Network (NACN) of network is the network defined on connections and in which two nodes are adjacent if and only if they are not adjacent in network. Since $L(T)$ and Non Adjacent Connected Network (NACN) are defined on the connections of a network, it follows that isolated nodes of networks (if has) play no role in $L(T)$ and Non Adjacent Connected Network (NACN) transformation.

We assume that the network under consideration is not connected and has no isolated nodes [1].

The following section -3 is providing binary labelling for input, transit and output in HUB connections with logical manner for1- HOP network with 23 different combinations, namely 000,001,010,100,011,101,110,111.

Proposed Scheme To Determine Nature Of Hub

I	T	O	Cases
0	0	0	Worst(W)
0	0	1	Good(G)
0	1	0	
1	0	0	
0	1	1	Better(BR)
1	0	1	
1	1	0	
1	1	1	Best(BT)

in the above table I : input O: output T: transit

Basic Observation On Linear Network (Aem,Naem)

1. $A_{11} = A_{nn} = A_{1n} = A_{n1} = 0$

2. $A_{ij} = A_{ji} = \begin{cases} 1 & if \quad i \neq j \\ 0 & if \quad i = j \end{cases}$

Observation on NAEM Network

1. $A_{11} = A_{nn} = 0, A_{1n} = A_{n1} = 1$
2. $A_{ij} = A_{ji} = 0 \; if \; i = j$
3. $A_{ii} = 0 = A_{jj}$
4. $A_{10} = A_{n1} = A_{1n} = A_{nn} = 0$

Example 1
Consider the following linear network P8 with 8 nodes, and corresponding adjacent and non-adjacent matrix representation.

Observation on linear Network
Case (1.1)

In Adjacent Edge Matrix (AEM) of P8 (out of 35 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
0	6	19	18
0%	17.1429%	54.2857%	51.4286%

Case (1.2)

In Non Adjacent Edge Matrix (NAEM) of P8 (out of 35combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
17	14	14	5
48.5714%	40%	40%	14.2857%

Comparison of Case (1.1) and Case (1.2) (out of 35combinations) in Linear Network P8

Network	Output			
	W	G	BR	BT
AEM	↑	↑	↓	↓
NAEM	↓	↓	↑	↑

Through Matrix Methodology

Case (1.3)

In AEM of P8 (out of 7C3 combinations) 2 different 3×3 zero matrix combination will provide worst cases. 4 different 2×2 zero matrix combination will provide worst cases

Case (1.4)

From NAEM of P8(out of 7C3 combinations), 6 different 2×2 zero matrix combination will provide worst cases

Example 2
Consider the cyclic network C6 with 6 nodes

Observation on Recurring Network
Case (2.1)

In AEM of C6 maximum of 6C3 combinations

Best(BT)	Better(BR)	Good(G)	Worst(W)
0	6	24	6
0%	30%	120%	30%

Case (2.2)

From NAEM of C6 maximum of 6C3 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
6	12	12	6
30%	60%	60%	30%

Comparison of Case (2.1) and Case (2.2) (maximum of 6C3 combinations)

Network	Output			
	W	G	BR	BT
AEM	Same	↑	↓	↓
NAEM	Same	↓	↑	↑

Through Matrix Methodology

Case (2.3)

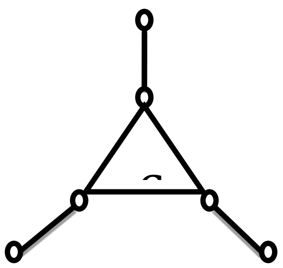
In AEM of C6 (out of 6C3 combinations), 4 different 2×2 zero matrix combination will provide worst cases

Case (2.4)

From NAEM of C6 (out of 6C3 combinations), 5 different 2×2 zero matrix combination will provide worst cases

Example 3

Consider the following crown type of network C31 with 6 nodes.



Crown network with 6 nodes

Observation of Crown Network

Case (3.1)

In AEM of C31 (out of 6C3 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
2	18	6	4 Row& 5 Column
10%	90%	30%	20%&25%

Case (3.2)

From NAEM of C31 (out of 6C3 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
1	9	9	9 Column & 10 Row
5%	45%	45%	45%&50%

Comparison of Case (3.1) and Case (3.2) (out of 6C3 combinations)

Network	Output			
	W	G	BR	BT
AEM	↓	↓	↑	↑
NAEM	↑	↑	↓	↓

Through Matrix Methodology

Case (3.3)

In AEM of C31 (out of 6C3 combinations) ,the entire crown network need not be perfect in all the ways (since it has 3×3 zero matrix combination).

Case (3.4)

From NAEM of C6 (out of 6C3 combinations) the entire crown network need not be perfect in all the ways (since it has 3×3 zero matrix combination)

Example 4

Consider any wheel type of network with n+ 1 node (Wn,1)

Case (4.1)

Here W41 is wheel with 5 nodes With the reference AEM of W41 (out of 8C3 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
8	24	28	1
14.2857%	42.8571%	50%	1.7851%

Case (4.2)

From NAEM of W41 (out of 8C3 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
0	8	24	19
0%	14.2857%	42.8571%	33.9285%

Comparison of Case (4.1) and Case (4.2) (out of 8C3 combinations)

Network	Output			
	W	G	BR	BT
AEM	↓	↑	↑	↑
NAEM	↑	↓	↓	↓

Through Matrix Methodology

Case (4.3)

From AEM of W41 (out of 8C3 combinations), the entire wheel networks are perfect in all the ways (since it has no n×n zero matrix combination).

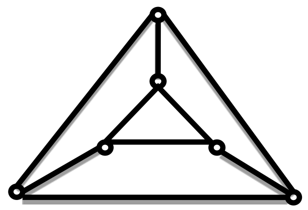
Case (4.4)

Through NAEM of W41 (out of 8C3 combinations)

The entire wheel networks need not be perfect in all the ways. Since it has 4×4 zero matrix combinations and 4 different 2×2 zero matrix combination will be the worst cases

Example 5

Consider the following 3-Regular connected network R33 with 6 nodes.



Regular Network of degree 3

Observation on 3-Regular Network

Case (5.1)

Here R33 is regular network with 6 nodes, In AEM of R33 (out of 9C3 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
3	24	23	15
3.5714%	28.5714%	27.3809%	17.8571%

Case (5.2)

From NAEM of R33 (out of 9C3 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
8	23	24	15
9.5238%	27.3809%	28.5714%	17.8571%

Comparison of Case (5.1) and Case (5.2) (out of 9C3 combinations)

Network	Output			
	W	G	BR	BT
AEM	same	↓	↑	↓
NAEM	same	↑	↓	↑

Through Matrix Methodology

Case (5.3)

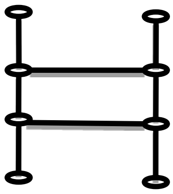
By AEM of R33 (out of 9C3 combinations), All the Regular network need not be perfect in all the ways since it has 3 different 3×3 zero matrix combination as worst cases

Case (5.4)

From NAEM of R33 (out of 9C3 combinations), All the Regular network need not be perfect in all the ways since it has 3 different 3×3 zero matrix combination and 3 different 2×2 zero matrix combination as worst cases.

Example 6

Consider the following ladder type of connected network L14 with 8 nodes



Ladder Network

Observation on Ladder Network

Here L14 is ladder Network with 8 nodes

Case (6.1)

From AEM of L14 (out of 8C3 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
1	15	18	14
1.7857%	26.7857%	32.1428%	25%

Case (6.2)

In NAEM of L14 (out of 8C3 combinations)

Best(BT)	Better(BR)	Good(G)	Worst(W)
8	19	18	8
14.2857%	33.9285%	32.1428%	14.2857%

Comparison of Case (6.1) and Case (6.2) (out of 8C3 combinations)

Network	Output			
	W	G	BR	BT
AEM	↑	same	↓	↓
NAEM	↓	same	↑	↑

Through Matrix Methodology Case (6.3) By AEM of R33 (out of 9C3 combinations) ,all ladder network need not be perfect in all the ways since it has 1 different 2×2 ,4×4 zero matrix combination as worst cases.

Case (6.4)

Through NAEM of R33 (out of 9C3 combinations) ,All ladder network need not be perfect in all the ways since it has 2 different 2×2,and 1 different 3×3 zero matrix combination as worst cases.

CONCLUSION

The Proposed method providing merits in HUB fitting in HOP,2- HOP ,… ,n-HOP with successful optimized manner.

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