A Study on Miracles through the Holy Bible using New Triangular Neutrosophic Cognitive Maps(TrNCMs).

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ABSTRACT

Our main objective of this paper is to the studying at length the various reasons for miracles with incidents from the Holy Bible adopting the new fuzzy tool called Triangular Neutrosophic Cognitive Maps to analyze the social problem. Usually in NCM we analyze the measure not only the existence of causal relation between concepts or the absence of causal relations between two concepts but also gives representation to the indeterminacy of relations between any two concepts.. But this new model gives ranking for the causes and indeterminacy of relations between any two concepts of the problem. The presence study deals studying at length the various reasons for miracles with incidents from the Holy Bible using Triangular Neutrosophic Cognitive Maps (TrNCMs). This paper consist five sections. In first section, we give the brief introduction to Neutrosophic Cognitive Maps, Section two gives the basic definitions of TrNCM. In Section three, we presented hidden pattern of the Triangular Neutrosophic Cognitive Maps (TrNCMs) dynamical system. In Fourth section we analyze the concept of the problem using Triangular Fuzzy Cognitive Maps (TrNCMs). In Final section we give the conclusion based on our study.

Key words: Neutrosophic Congitive Maps (NCMs), Triangular Fuzzy Numbers, Miracles, Bible.

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INTRODUCTION

In today's world the term "Miracle" has been so casually used in statements or comments like "It's a miracle that I was able to get a ticket" or "It's a miracle that the driver survived that terrible accident". These comments describe the occurrence as highly unlikely or even totally unexpected. However, the Holy Bible details Miracles as very specific divine actions. Four Greek terms used in the Greek New Testament very beautifully bring out the true meaning of the term "Miracle": they are "*Dunamis*"(Acts 2:22, Romans 15:19), which means Power, "*Saymeion*"(Matt 12:38,39, Acts 6:8) which means a Sign, "*Terata*"(Acts 2:19) which means

wonders and "Erga" (John 5:20.36) which translates to Work. Hence, Miracles as explained by the scriptures are events that are beyond the capabilities of man and beyond the regular workings of the universe. The Merriam-Webster Dictionary defines "Miracle" as an extraordinary event manifesting divine intervention in human affairs. The scripture in John 2:18 and Matthew 12:38 describes a true miracle as an event in the external world caused by the immediate agency or simple volition of God, operating without the use of means capable of being discerned by the senses and designed to authenticate the divine commission of a religious teacher and the truth of his message. Miracles are seals of a mission of divine origin or intervention that call everyone's attention to God and are rationally found to be unexplainable by probability or natural sciences. The miracles in the Holy Scriptures were proof that scriptural writers, prophets and all workers were messengers of God. The credibility of these miracles are further fortified by those who witness them and by the testimony of witnesses. A Miracle is an event that apparently contradicts known scientific laws and is hence thought to be due to supernatural causes especially to an act of god. Miracles in the new testament had a purpose - miracles were performed to confirm the word (Mark 16:20), to create faith in Jesus Christ (John 20:30-31), to demonstrate that God is with Jesus (John 3:2), to prove that Jesus is the Christ, the Son of God, as prophesied (Matt 8:16-17). The New Testament narrates about thirty nine miracles performed by Jesus. These miracles can be classified as Miracles of nature, Miracles of healing, and Miracles of resurrection[1].

Basic definition of Neutrosophic Cognitive Maps[2]

Definition 2.1

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

Definition 2.2

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

Definition 2.3

A NCMS with edge weights or causalities from the set{-1, 0, 1, I} are called simple NCMs. **Definition 2.4**

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 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 decreases) 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.

Definition 2.5

Let $C_1, C_2,..., C_n$ be nodes of a NCM. Let the neutrosofic 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 netrosofic adjacency matrix of the NCM.

Definition 2.6

Let C_1, C_2, \ldots, C_n be nodes of an NCM.

Let $A = \{a_1, a_2, \dots, a_n\}$ 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

 $a_i = 0$ if ai is off(no effect)

 $a_i = 1$ if ai is on(has effect)

 $a_i = I$ if ai is indeterminate(effect cannot be determined) for i=1,2,...,n.

Definition 2.7

Let C_1, C_2, \ldots, C_n be nodes of a FCM.

Let $C_1 C_2, C_2 C_3, \ldots, C_i C_j$ be the edges of NCM. Then the edges form a directed cycle. An NCM is said to be cyclic if it possesses a directed cycle. An NCM is said to be acyclic if it does not possess any directed cycle.

Definition 2.8

An NCM with cycles is said to have a feedback. When there is a feedback in the NCM.i.e when the casual relations flow through a cycle in a revolutionary manner the NCM is called a dynamical system.

Definition 2.9

Let $C_1 C_2, C_2 C_3, \ldots, C_{n-1} C_n$ be cycle, when C_i is switched on and if the causality flow through the edges of a cycle and if it again causes C_i , say that the dynamical system goes round and round. This is true for any node C_i , for $i=1,2,\ldots$ n the equilibrium state for this dynamical system is called the hidden pattern.

Definition 2.10

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

Definition 2.11

If the NCM settles with a neutrosophic state vector repeating in the form

 $A \rightarrow A_2 \dots A_i \rightarrow A_1 .$

then this equilibrium is called a limit cycle of the NCM.

Degrees of the Triangular Fuzzy Number The linguistic values of the triangular fuzzy numbers are

Very Low (0, 0, 0.1), Low (0, 0.1, 0.3), Medium Low (0.1, 0.3, 0.5), Medium (0.3,0.5,0.7)Medium High (0.5, 0.7, 0.9)

High (0.7, 0.9,1),

Intermediate fuzzy linguistic values

Intermediate medium (0.3,0.5,0.7)Lower intermediate (0.1,0.3,0.5)Higher intermediate(0.5,0.7,0.9)[3]

PROPOSED TRIANGULAR NEUTROSOPHIC COGNITIVE MAPS (TrNCMs).

Triangular Neutrosophic Cognitive Maps (TrNCMs) are more applicable when the data in the first place is an unsupervised one. The TrNCM works on the opinion of three experts. TrNCM models the world as a collection of classes and causal relations between classes. It is a different process when we compare to NCM. Usually the NCM gives only the ON-OFF position and intermediate conditions. But this Triangular Neutrosophic Cognitive Maps is more precise and it

gives the ranking for the causes and indeterminacy of relations between any two concepts of the problem by using the weightage of the attribute it is main advantage of the new Triangular Neutrosophic Cognitive Maps.

4.BASIC DEFINITIONS OF TRIANGULAR NEUTROSOPHIC COGNITIVE MAPS[5].

Definition 2.1 A TrNCMs is a directed graph with concepts like policies, events, etc, as nodes and causalities as edges. It represents casual relationship between concepts.

Definition 2.2 When the nodes of the TrNCMs are fuzzy sets then they are called as fuzzy nodes.

Definition 2.3 A TrNCMS with edge weights or causalities from the set{-1, 0, 1, I} are called simple TrNCMs.

Definition 2.4 Let C_i and C_j denote the two nodes of the TrNCMs. The directed edge from C_i to C_j denotes the casuality C_i on C_j called connections. Every edge in the TrNCMs 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 decreases) in C_i causes decrease(or increase) in C_i , $e_{ij} = I$ if the relation or effect of C_i on C_j is an indeterminate.

Definition 2.5 Let C_1, C_2, \ldots, C_n be nodes of a TrNCMs. Let the neutrosofic 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 netrosofic adjacency matrix of the TrNCMs.

Definition 2.6 Let C_1, C_2, \ldots, C_n be nodes of an TrNCMs.

Let $A = \{a_1, a_2, \dots, a_n\}$ 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

 $a_i = 0$ if a_i is off(no effect)

 $a_i = 1$ if a_i is on(has effect)

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

Definition 2.7

Let C_1, C_2, \ldots, C_n be nodes of a TrNCMs.

Let C_1 , C_2 , C_2 , C_3 , ..., C_i , C_j be the edges of TrNCMs. Then the edges form a directed cycle. An TrNCMs is said to be cyclic if it possesses a directed cycle. An TrNCMs is said to be acyclic if it does not possess any directed cycle.

Definition 2.8

An TrNCMs with cycles is said to have a feedback. When there is a feedback in the TrNCMs.i.e when the casual relations flow through a cycle in a revolutionary manner the TrNCMs is called a dynamical system.

Definition 2.9

Let $C_1 C_2$, C_3 , ..., C_{n-1} , C_n be cycle, when C_i is switched on and if the casuality flow through the edges of a cycle and if it again causes C_i , say that the dynamical system goes round and round. This is true for any node C_i , for i=1,2,... the equilibrium state for this dynamical system is called the hidden pattern.

Definition 2.10

If the equilibrium state of a dynamical system is a unique state vector, then it is called a fixed point. Consider the TrNCMs with C_1, C_2, \ldots, C_{11} as nodes . For example let us start the dynamical system by switching on C1. Let us assume that the TrNCMs settles down with C_1 and Cn on i.e. the state vector remain as $(1,0,0,\ldots,1)$ this neutrosophic state vector $(1,0,0,\ldots,1)$ is called the fixed point.

Definition 2.11

If the TrNCMs settles with a neutrosophic state vector repeating in the form

A \rightarrow A2 \rightarrow A₁ \rightarrow A₁ then this equilibrium is called a limit cycle of the TrNCMs.

METHOD OF DETERMINING THE HIDDEN PATTERN OF TRIANGULAR NEUTROSOPHIC COGNITIVE MAPS (TrNCMs)

- **Step 1:**Let $_{Tr}C_1$, $_{Tr}C_2$,..., $_{Tr}C_n$ be the nodes of an TrNCMs, with feedback, Let Tr(M) be the associated adjacency matrix.
- **Step 2:**Let us find the hidden pattern when ${}_{Tr}C_1$ is switched ON. When an input is given as the vector $A_1 = (1, 0, ..., 0)$, the data should pass through the relation matrix M. This is done by multiplying A_i by the triangular matrix M.
- **Step 3:**Let $A_{iTr}(M) = (a_1, a_2, ..., a_n)$ will get a triangular vector. Suppose $A_{1Tr}(M) = (1, 0, ..., 0)$ it gives a triangular weight of the attributes, we call it as $A_{iTr}(M)_{weight}$.
- Step 4: Adding the corresponding node of the three experts opinion, we call it as A_{i Tr}(M)_{sum}.
- **Step 5:**The threshold operation is denoted by (\rightarrow) ie., $A_{1Tr}(M)_{Max(weight)}$. That is by replacing a_i by 1 if a_i is the maximum weight of the triangular node (ie., $a_i=1$), otherwise a_i by 0(ie., $a_i=0$).
- Step 6:Suppose $A_{1Tr}(M) \rightarrow A_2$ then consider $A_{2Tr}(M)_{weight}$ is nothing but addition of weightage of the ON attribute and $A_{1Tr}(M)_{weight}$.
- **Step 7:** Find $A_{2 Tr}(M)_{sum}$ (ie., summing of the three experts opinion of each attributes).
- **Step 8:** The threshold operation is denoted by(\rightarrow) ie., $A_{2Tr}(M)_{Max(weight)}$. That is by replacing a_i by 1 if a_i is the maximum weight of the triangular node (ie., $a_i=1$), otherwise a_i by 0 (ie., $a_i=0$).
- **Step 9:** If the $A_{1Tr}(M)_{Max(weight)}$. = $A_{2Tr}(M)_{Max(weight)}$. Then dynamical system end otherwise repeat the same procedure.
- Step 10: This procedure is repeated till we get a limit cycle or a fixed point.

CONCEPT OF THE PROBLEM

we have taken the following eleven concepts {TrC₁, TrC₂,...,TrC₁₁} To analyze to find the miracles through Holy Bible using linguistic questionnaire and the expert's opinion The following concepts are taken as the main nodes of our problem. [6,7] TrC₁- Perseverance through prayer TrC₂-Patience TrC₃- Faith TrC₄- Authority in the spiritual realm TrC₅-Gods compassion TrC₆- Forgiveness TrC₇- Hearing the word of God TrC₈- Humility TrC₉-Love

TrC₁₀₋Obedience

 TrC_{11} - Repentance

 TrC_1 - Perseverance through prayer .Perseverance is anything undertaking continued pursuit or prosecution of any business or enterprise begin, in theology, persistence means continuance in a state of grace to a state of glory.

TrC ₂-Patience

An active endurance of opposition, not a passive resignation. Patience is endurance, steadfastness, long suffering, and forbearance.God is patient (Romans 15:5). He is slow to anger in relation to the Hebrews (Exodus 34:6; Numbers 14:18,Nehemiah 9:17; Psalms 86:15; Isaiah 48:9; Hosea 11:8-9).

 TrC_3 -Faith refers to the trust one puts in god at all times. It is total surrender to god with full belief without any need for logical proof or material evidence, faith makes us to encounter god

directly, it demands to place our full trust in god. TrC₄- Authority in the spiritual realm The authority that the lord gives to his church-spiritual authority (not in the natural realm but spiritual.

 TrC_5 - God's compassion It simply says that compassion means sympathetic consciousness of others' distress along with a desire to alleviate it.

TrC₆- forgiveness

An act of God's grace to forget forever and not hold people of faith accountable for sins they confess; to a lesser degree the gracious human act of not holding wrong acts against a person.

Forgiveness has both divine and human dimensions. In the divine relationship, it is first of all,

the gracious act of God by which believers are put into a right relationship to God and

transferred from spiritual death to spiritual life through the sacrifice of Jesus.Jesus is the perfect and final Sacrifice through which God's forgiveness is mediated to every person (Romans 3:25; Hebrews 10:11-12).

 TrC_7 - Hearing the word of god The Bible claims to be the Word of God and by staking this claim the Bible simply but plainly declares its divine authority, complete infallibility and absolute sufficiency.

 TrC_{8} - Humility is the prerequisite for honor (Prov 15:33; 18:12; 22:4; 29:23) and physical blessing (Psalm 37:11; Matt 5:5). Intimately associated with the fear of the Lord (Psalms 25:9 Psalms 25:12-14; Prov 15:33), it may provide the key to wealth and life (Prov 22:4); but even when blessings are postponed, a humble spirit is necessary (Prov 16:18-19; cf. Romans 12:14 Romans 12:16-17). It is the gateway to eternal life (Matt 5:3; 18:1-4), not necessarily physical reward (5:10-12).

 TrC_8 -Faith refers to the trust one puts in god at all times. It is total surrender to god with full belief without any need for logical proof or material evidence, faith makes us to encounter god directly, it demands to place our full trust in god.

TrC₉- Love urges us to diffuse its fragrance on others love triggers off an emotional response

leading to action.

 TrC_{10} - Obedience refers to being ready to subject ourselves to the commands, wishes and guidelines of others. Obedience teaches us to deny ourselves. It prompts to act in accordance with another wish .obedience gives moral and spiritual power and strength to command. The more one obeys the more one rule.

TrC₁₁ - Repentance

Repentance is a change of heart repentance infuses a deep sense of humility in people repentance brings about inner healing, it takes up the broken chains of communication with god and with one another on a sound footing.

Now we give the connection matrix related with the TrNCMs .Given by the expert(Pasteur)

LINGUISTIC VARIABLES FOR THE TRIANGULAR FUZZY NODES

	Trc_1	Trc_2	Trc_3	Trc_4	Trc_5	Trc_6	Trc_7	Trc_8	Trc_9	Trc_{10}	Trc_{11}
Trc_1	0	h	h	mh	mh	mh	mh	h	h	vh	h
Trc_2	h	0	т	т	vh	mh	h	h	h	ml	т
Trc ₃	h	т	0	т	vh	h	h	h	т	h	h
Trc_4	mh	т	т	0	т	LI	т	т	IM	vh	h
Trc_5	mh	vh	h	т	0	h	mh	mh	h	mh	h
Trc_{6}	mh	mh	h	LI	h	0	vh	h	IM	h	HI
Trc_7	mh	h	h	т	mh	vh	0	h	т	т	т
Trc ₈	mh	h	h	mh	mh	h	h	0	vh	т	т
Trc_9	h	h	т	IM	h	IM	т	vh	0	т	т
Trc_{10}	vh	ml	h	vh	mh	h	m	m	т	0	т
Trc_{11}	h	т	h	h	vh	HI	т	т	т	т	0

Linguistic values of the triangular fuzzy nodes

	Trc_1	Trc_2	Trc_3	Trc_4	Trc_5	Trc_6	Trc_7	Trc_8	Trc_9	Trc_{10}	Trc_{11}
Trc_1	0	0.7,0.9,1	0.7,0.9,1	0.5,0.7,0.9	0.5,0.7,0.9	0.5,0.7,0.9	0.5,0.7,0.9	0.7,0.9,1	0.7,0.9,1	0.9,1,1	0.7,0.9,1
Trc_2	0.7,0.9,1	0	0.3,0.5,0.7	0.3,0.5,0.7	0.9,1,1	0.5,0.7,0.9	0.7,0.9,1	0.7,0.9,1	0.7,0.9,1	0.1,0.3,0.5	0.3,0.5,0.7
Trc ₃	0.7,0.9,1	0.3,0.5,0.7	0	0.3,0.5,0.7	0.9,1,1	0.7,0.9,1	0.7,0.9,1	0.7,0.9,1	0.3,0.5,0.7	0.7,0.9,1	0.7,0.9,1
Trc_4	0.5,0.7,0.9	0.3,0.5,0.7	0.3,0.5,0.7	0	0.3,0.5,0.7	0.1,0.3,0.5	0.3,0.5,0.7	0.3,0.5,0.7	0.3,0.5,0.7	0.9,1,1	0.7,0.9,1
Trc_5	0.5,0.7,0.9	0.9,1,1	0.7,0.9,1	0.3,0.5,0.7	0	0.7,0.9,1	0.5,0.7,0.9	0.5,0.7,0.9	0.7,0.9,1	0.5,0.7,0.9	0.7,0.9,1
Trc_6	0.5,0.7,0.9	0.5,0.7,0.9	0.7,0.9,1	0.1,0.3,0.5	0.7,0.9,1	0	0.9,1,1	0.7,0.9,1	0.3,0.5,0.7	0.7,0.9,1	0.7,0.9,1
Trc_7	0.5,0.7,0.9	0.7,0.9,1	0.7,0.9,1	0.3,0.5,0.7	0.5,0.7,0.9	0.9,1,1	0	0.7,0.9,1	0.3,0.5,0.7	0.3,0.5,0.7	0.5,0.7,0.9
Trc ₈	0.5,0.7,0.9	0.7,0.9,1	0.7,0.9,1	0.5,0.7,0.9	0.5,0.7,0.9	0.7,0.9,1	0.7,0.9,1	0	0.9,1,1	0.3,0.5,0.7	0.3,0.5,0.7
Trc_9	0.7,0.9,1	0.7,0.9,1	0.3,0.5,0.7	0.3,0.5,0.7	0.7,0.9,1	0.3,0.5,0.7	0.3,0.5,0.7	0.9,1,1	0	0.3,0.5,0.7	0.3,0.5,0.7
Trc_{10}	0.9,1,1	0.1,0.3,0.5	0.7,0.9,1	0.7,0.9,1	0.7,0.9,1	0.7,0.9,1	0.3,0.5,0.7	0.3,0.5,0.7	0.3,0.5,0.7	0	0.3,0.5,0.7
Trc_{11}	0.7,0.9,1	0.3,0.5,0.7	0.7,0.9,1	0.7,0.9,1	0.9,1,1	0.5,0.7,0.9	0.3,0.5,0.7	0.3,0.5,0.7	0.3,0.5,0.7	0.3,0.5,0.7	0

Attribute TrC_1 is ON: $A^{(1)} = (1\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0\ 0)$

Table: 1 Weightage of the attributes

Attributes	Trc_1	Trc_2	Trc ₃	Trc_4	Trc_5	Trc_{6}	Trc_7	Trc ₈	Trc_9	Trc_{10}	Trc_{11}
100000000 0	0.9343	0.2899	0.8376	0.8376	0.6766	0.8376	0.4833	0.4833	0.4833	0	0.4833
01000000 0	0.6766	0.9343	0.8376	0.4833	0	0.8376	0.6766	0.6766	0.8376	0.6766	0.6766
00100000 0	0.8096	0	0.4671	0.4671	0.9030	0.6540	0.8096	0.8096	0.8096	0.2802	0.4671
000100000 0	0.8728	0.2709	0.7825	0.7825	0.6321	0.7825	0.4515	0.4515	0.4515	0	0.4515
000010000	0.6540	0.9343	0.8096	0.4671	0	0.8096	0.6540	0.6540	0.8096	0.6540	0.8096
000001000	0.6540	0.6540	0.8096	0.2802	0.8096	0	0.9343	0.8096	0.4671	0.8096	0.6540
000000100 0	0.6766	0.6766	0.8376	0.2899	0.8376	0	0.9343	0.8376	0.4833	0.8376	0.6766
00000010 0	0.8376	0.8376	0.4833	0.4833	0.8376	0.4833	0.4833	0.9343	0	0.4833	0.4833
00000001 0	0.6766	0.8376	0.8376	0.6766	0.6766	0.8376	0.8376	0	0.9343	0.6766	0.6766
0 00000000	0	0.8376	0.8376	0.6766	0.6766	0.6766	0.6766	0.8376	0.8376	0.9343	0.8376
000000000	0.8376	0	0.4833	0.4833	0.9343	0.6766	0.8376	0.8376	0.8376	0.2899	0.4833

 Totalweight
 7.6297
 6.2728
 8.0234
 5.9275
 6.984
 6.5954
 7.7787
 6.4941
 6.9515
 5.6421
 6.6995

 Totalwergeweight
 0.6936
 0.570
 0.7294
 0.5388
 0.6349
 0.5999
 0.7071
 0.5903
 0.6319
 0.5129
 0.6090

CONCLUSION

Using A new fuzzy model Triangular Fuzzy Cognitive Maps (TrNCMs) gives the ranking for the Miracles through Holy Bible are Faith(0.7294), Hearing the word of God(0.7071), Persistence/Perseverance in prayer(0.6936), God,s Compassion(0.6349), Love (0.6319), Repentance(0.6090), Forgiveness(0.5999), Humility(0.5903), Patience(0.5700) Authority in the spiritual realm (0.5388). Obedience(0.5129). When we use Neutrosophic Cognitive Maps (NCMs) the above causes are ON stage and indeterminacy of relations between any two concepts.. But this new model gives the ranking of the causes of the problem. This is the beauty of this Triangular Neutrosophic Cognitive Maps (TrNCM).

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