Parapose, Triggering for Transition of matrix and Principles of an Object to round around the Chord or the Point

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Abstract: -

In the Transpose mode of a matrix we can see the arrangement of the literals of the matrix in a specific manner. If we rearrange these literals in another specific manner and combine the resulting matrix with original and/or transpose as we need, then, there will be different patterns of matrix and we may call this way of transition of the literals of the matrix as Parapose of matrix and the way of combination of the matrices as the Triggering for Transition. Then there are three kinds of triggering of transitions. Such as - 1) The Triggering for Transition in First kind, 2) The Triggering for Transition in Second kind and 3) The Triggering for Transition in Third kind. This triggering of Transition may exhibit the principle of any set of objects rounding centering the point or around the chord.

Parapose of Matrix

If the arrangement of the literals of a matrix occurs in a specific manner, such that, the last column will be replaced the first row and so on where the first column will be at the last row where first and last literals will interchange their positions, and if we say this transition as the Parapose of the original matrix.

And if we denote it as A^p where there original matrix is A, then,

$A^{p}_{mxn} = \begin{pmatrix} a_{mn} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{m1} & \cdots & a_{11} \end{pmatrix}_{nxm}$ where $A_{mxn} = \begin{pmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{m1} & \cdots & a_{mn} \end{pmatrix}_{mxn}$ be the original matrix

For example:-

Let $A_{5X3} = \begin{pmatrix} 1 & 3 & 6 \\ 2 & 5 & 3 \\ 4 & 6 & 1 \\ 7 & 8 & 2 \\ 9 & 4 & 5 \end{pmatrix}_{5X3}$

Then $A^{p}_{3X5} = \begin{pmatrix} 5 & 2 & 1 & 3 & 6 \\ 4 & 8 & 6 & 5 & 3 \\ 9 & 7 & 4 & 2 & 1 \end{pmatrix}_{3X5}$

That is the parapose of $\begin{pmatrix} 1 & 3 & 6 \\ 2 & 5 & 3 \\ 4 & 6 & 1 \\ 7 & 8 & 2 \\ 9 & 4 & 5 \end{pmatrix}$ is $\begin{pmatrix} 5 & 2 & 1 & 3 & 6 \\ 4 & 8 & 6 & 5 & 3 \\ 9 & 7 & 4 & 2 & 1 \end{pmatrix}$

Triggering for transition

- ***Triggering for transition in first kind:-***

The mean of addition of a square matrix with the transpose[i] or parapose of the matrix produce the new matrix with respect to parapose and transpose, if we call these resulting matrices as triggered in first kind and if we denote this as f(x), then,

f(x) can be written as

$f(x)_T$ =mean($x + x^T$), x^T be the transpose of x

and

$f(x)_p=(x + x^p)$, x^p be the parapose of x

For example:-

Let $A_{3X3} = \begin{pmatrix} 1 & 3 & 6 \\ 2 & 5 & 3 \\ 7 & 4 & 8 \end{pmatrix}$

Then, $A^T = \begin{pmatrix} 1 & 2 & 7 \\ 3 & 5 & 4 \\ 6 & 3 & 8 \end{pmatrix}$ and

$A^p = \begin{pmatrix} 8 & 3 & 6 \\ 4 & 5 & 3 \\ 7 & 2 & 1 \end{pmatrix}$

Then, $f(x)_T = \begin{pmatrix} 1 & 3 & 6 \\ 2 & 5 & 3 \\ 7 & 4 & 8 \end{pmatrix} + \begin{pmatrix} 1 & 2 & 7 \\ 3 & 5 & 4 \\ 6 & 3 & 8 \end{pmatrix} = \begin{pmatrix} 2 & 5 & 13 \\ 5 & 10 & 7 \\ 13 & 7 & 16 \end{pmatrix}$

And the mean of $f(x)_T = \begin{pmatrix} 1 & 2.5 & 6.5 \\ 2.5 & 5 & 3.5 \\ 6.5 & 3.5 & 8 \end{pmatrix}$

And

$f(x)_p = \begin{pmatrix} 9 & 6 & 12 \\ 6 & 10 & 6 \\ 14 & 6 & 9 \end{pmatrix}$

And the mean of $f(x)_p = \begin{pmatrix} 4.5 & 3 & 6 \\ 3 & 5 & 3 \\ 7 & 3 & 4.5 \end{pmatrix}$

I.e., $\begin{pmatrix} 1 & 2.5 & 6.5 \\ 2.5 & 5 & 3.5 \\ 6.5 & 3.5 & 8 \end{pmatrix}$ and $\begin{pmatrix} 4.5 & 3 & 6 \\ 3 & 5 & 3 \\ 7 & 3 & 4.5 \end{pmatrix}$ are the triggered in first kind with respect to transpose and parapose.

* The values of a_{ij} and a_{ji} are same for all i, j ($i \neq j$) after the triggering in the first kind in transpose and a_{ij} and $a_{(n-j+1)(m-i+1)}$ are same in parapose mode.

For example,

Here in the transpose mode, (a_{12} = 2.5) = (a_{21} =2.5), (a_{13} = 6.5) = (a_{31} = 6.5) and (a_{23} = 3.5) = (a_{32} = 3.5)

And in parapose mode, (a_{12} = 3) = (a_{23} = 3), (a_{21} = 3) = (a_{32} = 3) and (a_{11} = 4.5) = (a_{33} = 4.5)

- ***Triggering for transition in second kind:-***

If we add the parapose and the transpose of a square matrix and then make transition the matrix into transpose or parapose mode and if we say the resulting matrix as Triggered of second kind, and the way to produce of transition as Triggering for second kind and if we denote this as β(x), then, for x be a square matrix of order m, β(x) can be written as

$\beta(x)_T$ =mean$(x^T + x^p)^T$

=mean $(x + x^{pT})$, x^{pT} be the transpose of parapose of x

$\beta(x)_p$ = mean$(x^T + x^p)^p$

=mean $(x + x^{Tp})$, x^{Tp} be the parapose of the transpose of x

Here, $\beta(x)_T$ and β(x)p are identical.

For example:-

Let $A = \begin{pmatrix} 1 & 3 & 6 \\ 2 & 5 & 3 \\ 7 & 4 & 8 \end{pmatrix}$

Then $A^T = \begin{pmatrix} 1 & 2 & 7 \\ 3 & 5 & 4 \\ 6 & 3 & 8 \end{pmatrix}$, $A^p = \begin{pmatrix} 8 & 3 & 6 \\ 4 & 5 & 3 \\ 7 & 2 & 1 \end{pmatrix}$, $A^{TP} = \begin{pmatrix} 8 & 4 & 7 \\ 3 & 5 & 2 \\ 6 & 3 & 1 \end{pmatrix}$ and $A^{pT} = \begin{pmatrix} 8 & 4 & 7 \\ 3 & 5 & 2 \\ 6 & 3 & 1 \end{pmatrix}$

Then $\beta(x)_T = \begin{pmatrix} 9 & 7 & 13 \\ 5 & 10 & 5 \\ 13 & 7 & 9 \end{pmatrix}$ and $\beta(x)_p = \begin{pmatrix} 9 & 7 & 13 \\ 5 & 10 & 5 \\ 13 & 7 & 9 \end{pmatrix}$

That is $\beta(x)_T = \beta(x)_p$.

And mean of $\beta(x)_T$ or $\beta(x)_p = \begin{pmatrix} 4.5 & 3.5 & 6.5 \\ 2.5 & 5 & 2.5 \\ 6.5 & 3.5 & 4.5 \end{pmatrix}$

This is the triggered in second kind

- ***Triggering in third kind:-***

If we make the resulting matrix which is the sum of β(x) with its transpose or parapose and if we say the matrix as the Triggered in third kind and the way to produce the resulting matrix as triggering in third kind, and if we denote this matrix as γ(x) , then for x be a square matrix of order m, γ(x) an be written as

$$\gamma(x) = ((x^T + x^p) + (x^T + x^p)^T) \text{ or}$$
$$= ((x^T + x^p) + (x^T + x^p)^p) \text{ or}$$
$$= \text{mean}(x + x^T + x^p + x^{Tp}) \text{ or}$$
$$= \text{mean}(x + x^T + x^p + x^{pT}) \text{ or}$$
$$= \text{mean}(\beta(x)_p + \beta(x)_{pT}) \text{ or}$$
$$= \text{mean}(\beta(x)_T + \beta(x)_{Tp})$$

For example:-

$$\text{Let } A = \begin{pmatrix} 1 & 3 & 6 \\ 2 & 5 & 3 \\ 7 & 4 & 8 \end{pmatrix}$$

$$\text{Then, the mean of } \beta(x)_p = \begin{pmatrix} 4.5 & 3.5 & 6.5 \\ 2.5 & 5 & 2.5 \\ 6.5 & 3.5 & 4.5 \end{pmatrix}$$

Then,

$$\gamma(x) = \begin{pmatrix} 4.5 & 3 & 6.5 \\ 3 & 5 & 3 \\ 6.5 & 3 & 4.5 \end{pmatrix}$$

This is the triggered in third kind.

The principle of movement of the objects around a chord and a point

Let A (≠ NULL) be a set contains a number of elements.

We give the motion these elements. What will be the characteristic of the elements at the time of rounding?

- ***The movement of the object around a chord:-***

The objects will be rounded around a chord if the objects move in a specific way, such that triggering is performed in the specific way, where the objects will be moved as the transpose or parapose mode, i.e., triggering in first kind,

i.e., the object of a_{ij} goes to the position a_{ji} and a_{ji} goes to the a_{ij} and so on for the transpose mode or the object from a_{ij} goes to the $a_{(n-j+1)(m-i+1)}$ and from $a_{(n-j+1)(m-i+1)}$ to a_{ij} position for the parapose mode.

If the triggering is performed in transpose mode then we can say this as left side triggering and the elements will be interchanging bending left side and the chord will be also bend left side.

If the triggering is performed in parapose mode then we can this as right side triggering and the chord will be bend right side and the elements will be interchanging bending right side.

For example:

Let A= {9, 3, 9, 5, 1, 2, 7, 4, 6} be a set of elements which is arranged in a matrix as

$$\begin{pmatrix} 9 & 3 & 9 \\ 5 & 1 & 2 \\ 7 & 4 & 6 \end{pmatrix}$$

Then the elements except the diagonal part are {3, 9, 5, 2, 7, 4}

Then $A^T = \begin{pmatrix} 9 & 5 & 7 \\ 3 & 1 & 4 \\ 9 & 2 & 6 \end{pmatrix}$ and $A^p = \begin{pmatrix} 6 & 2 & 9 \\ 4 & 1 & 3 \\ 7 & 5 & 9 \end{pmatrix}$

Let we trigger the elements in first kind in transpose mode

Then,

The resulting matrix will be

$$\begin{pmatrix} 9 & 4 & 8 \\ 4 & 1 & 3 \\ 8 & 3 & 6 \end{pmatrix}$$

Here ($a_{12} = 4$) = ($a_{21} = 4$), ($a_{13} = 8$) = ($a_{31} = 8$) and ($a_{23} = 3$) = ($a_{32} = 3$)

And the elements will be interchanged as the arrow. And the movement will be around the chord which is the diagonal part (9, 1, 6).

Here we can say the transpose as the half triggering and the addition as full triggering and for each full triggering the elements will be rounded around the chord one time.

Similarly, if we trigger the elements as parapose mode, then the resulting matrix will be as

$$\begin{pmatrix} 7.5 & 2.5 & 9 \\ 4.5 & 1 & 2.5 \\ 7 & 4.5 & 7.5 \end{pmatrix}$$

Here ($a_{11} = 7.5$) = ($a_{33} = 7.5$), ($a_{12} = 2.5$) = ($a_{23} = 2.5$) and ($a_{21} = 4.5$) = ($a_{32} = 4.5$)

Then the elements will be moved as the direction arrow around the chord (7, 1, 9).

Here we can say the parapose as the half triggering and the addition as full triggering and for each full triggering the elements will be rounded around the chord one time.

I think all elements which are rounding with their own chords maintain this principle. Such as the earth is triggering by the sun so the elements of the earth maintains this principle and moves rounds its own chord.

- ***Movement of the elements around the point:-***

The objects will be rounded centering a point when the objects will be affected from more than one side.

Here both transpose and parapose will be affected over elements.

Let $A = \begin{pmatrix} 9 & 3 & 9 \\ 5 & 1 & 2 \\ 7 & 4 & 6 \end{pmatrix}$ be a set of elements which denotes the objects

The objects will be rounded centering a point when the objects will be moved, i.e., triggered in at least second kind mode i.e. both transpose and parapose mode will be provided, such that at least the resulting matrix will be the function $\beta(x)$.

Here $A^T = \begin{pmatrix} 9 & 5 & 7 \\ 3 & 1 & 4 \\ 9 & 2 & 6 \end{pmatrix}$ and $A^p = \begin{pmatrix} 6 & 2 & 9 \\ 4 & 1 & 3 \\ 7 & 5 & 9 \end{pmatrix}$ and $A^{Tp} = A^{pT} = \begin{pmatrix} 6 & 4 & 7 \\ 2 & 1 & 5 \\ 9 & 3 & 9 \end{pmatrix}$

Then, $\beta(x) = x + x^{Tp}$ or $x + x^{pT}$ or $(x^T + x^p)^k$, $k = \{T, p\}$.

$$= \text{mean of } \begin{pmatrix} 15 & 7 & 16 \\ 7 & 2 & 7 \\ 16 & 7 & 15 \end{pmatrix}$$

$$= \begin{pmatrix} 7.5 & 3.5 & 8 \\ 3.5 & 1 & 3.5 \\ 8 & 3.5 & 7.5 \end{pmatrix}$$

That is, the a_{22} will be the middle point to round the objects.

Here a_{11} and a_{33}, a_{12} and a_{32}, a_{21} and a_{23} and a_{13} and a_{31} are interchanged their positions correspondently at the time of rounding.

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[i] Text Book Of Matrix, A.K. Sharma, Discovery Publishing House, 01-Jan-2004 – 105 page