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I.Q. AND MEMORY MAXIMISATION

SUNIRMAL ROY

ABSTRACT: Graph enumeration is the most important work in graph theory. Author's technique in graph enumeration is able to draw all types of graphs. All non-isomorphic structures of a compound has been possible to draw by this technique. The number of possible connected non-isomorphic graphs having a fixed number of vertices and edges was possible to count by polya's method. This was the base of graph theory. But this method did not consider parallel edges (edges joining the same two vertices) and by this method the graphical pictures of the non-isomorphic graphs were not possible to obtain. All these limitations are removed in Roy's graph technique . For this reason, it is possible to draw all possible connected non-isomorphic structures of all graph theoretic-problems.

Applying graph theory shortest path and shortest spanning tree of the vertices in the human brain has been obtained. Following the shortest path between the starting vertex and the solution vertex memory, human I.Q. and following that structure computer I.Q can be maximised by this technique.

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TECHNIQUE :

Suppose one wants to draw all non-isomorphic connected graphs having n vertices and e edges (including parallel edges). n vertices can be connected minimally by (n-1) i.e. N(say) edges. Maximum number of degree of incidences for any vertex is k (say).

1. Find all non-isomorphic simple (excluding parallel edges) graphs having n vertices and N edges. These G_1 (say) graphs can be obtained by partition theory i.e. by n partition of the number 2 N.

2. Then find all non-isomorphic simple graphs having n vertices and (N+1) edges. Since (N+1) edges have totally 2(N+1) degree of incidence, these G_2 (say) graphs can be obtained by partition theory i.e. by n partition of the number 2(N+1).

3. Then find all non-isomorphic simple graphs having n vertices and (N+2) edges. Since (N+2) edges have totally 2(N+2) degree of incidence, these G_3 (say) graphs can be obtained by partition theory i.e. by n partition of the number 2(N+2).

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(k) In this way find all non-isomorphic simple graphs having n vertices and e edges. Since e edges have 2e degree of incidence. These G (say) graphs can be obtained by partition theory i.e. by n partition of the number 2e.

(l) Now for (1) to get e edges we have to add e-N edges to each of the G_1 graphs. For this, find all partitions (remembering no number is greater than or equal to k) of the number e-N. If there are r_1 elements in any one of this partition. Then these e-N edges can be added in N places in Nc_{r1} ways. In this way find Nc_{r2}, Nc_{r3}.....ways for other partitions having r2, r3,...... etc. elements. Then for (1) we shall get Nc_{r1} + Nc_{r2} + ...)G_1 connected graphs having n vertices and e edges.

(2) For (2) to get e edges we have to add e-(N+1) edges to each of the graphs. For this find all partitions (remembering no number is greater than or equal to k) of the number e-N-1. Find N+1Cm1, N+1Cm2 .....etc. ways for partitions having m1, m2......etc. elements respectively. Then for (2) we shall get (N+1Cm1 +N+1Cm2 +.........) G_2 connected graphs) having n vertices and e edges.

In this way add edges to edges to all graphs in (1), (2), ...k) to get e edges in all cases. Remember that for all graphs in (k) no edge is to be added. In this way we are getting.

(NCr2 +NCr2 + ...G1 + (N+1Cm1 +N+1Cm2.......)G2+....+G i.e. T_1 (say) connected graphs having n vertices and e edges (including parallel edges). Some of these graphs are again isomorphic. Find all non-isomorphic possible T_2 graphs among these T_1 graphs. Find all non-isomorphic possible (degree of incidence of no vertex is greater than or equal to k) T_3 graphs among these T_2 graphs. Then T_3 graphs will give all possible non-isomorphic connected graphs having n vertices and e edges (considering parallel edges). In this way we can show that total number of non-isomorphic connected graphs of C_6 H_6 (benzene) is 3(5c2+5c2+5c3 +5c4)+4(6c1+6c2+6c3)+5(7c1+7c2)+6(8c1)+6=463.

All of these cmpounds are different in properties.But some of these compounds may be abolished after creation due to weak bonds between the molecules.In these way many new compounds can be discovered.

In this way it has been possible to determine all non-isomorphic structure of almost all compounds.

Similarly non-isomorphic structures of any compound of any vertices has been possible to construct. New compounds can be discovered by this method.

It is possible to find algorithms of different graph theoretic problems having minimum execution time by this technique. We can also know how different compounds were formed.

<u>APPLICATION IN MAXIMISATION OF HUMAN I.Q. AND MEMORY :</u>

The number of possible connected non-isomorphic graphs having a fixed number of vertices and edges was possible to count by polya's method. This was the base of graph theory. But this method did not consider parallel edges (edges joining the same two vertices) and by this method the graphical pictures of the non-isomorphic graphs are not possible to obtain. All these limitations are removed in Roy's graph technique. For this reason, better algorithms of problems (which can have graph theoretic solution) can be obtained. In this way shortest path between two vertices can be obtained.

Shortest path from one vertex to another vertex in the brain.

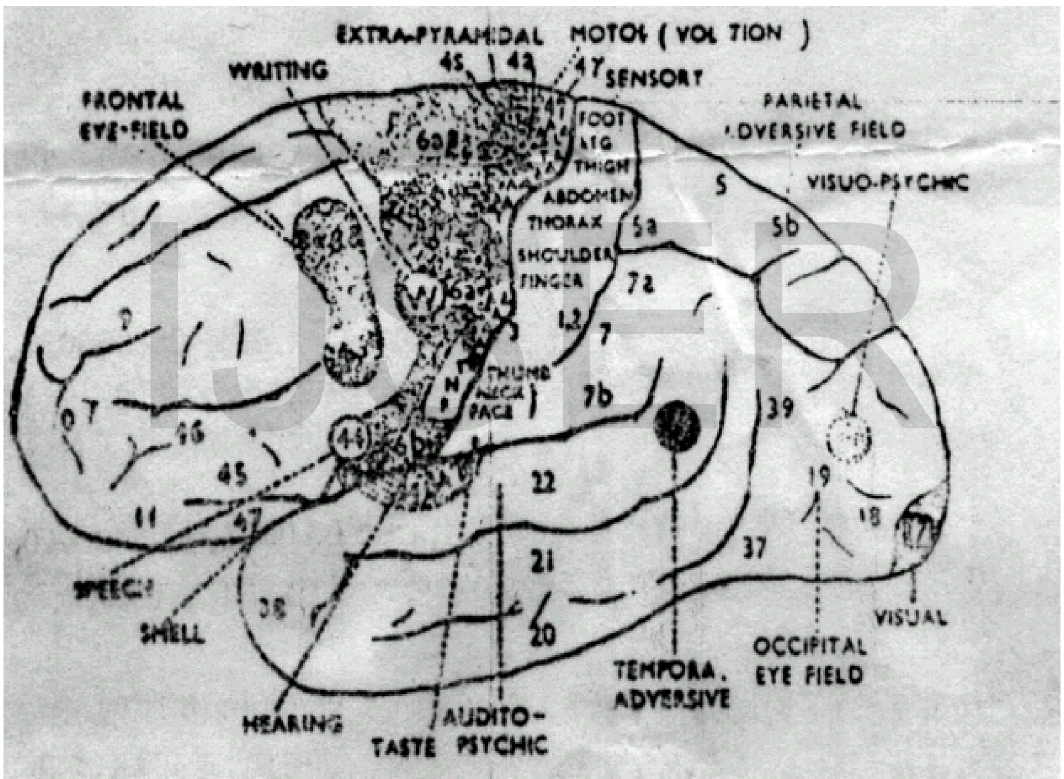

Fig. 3.226. The centres and areas in the left cerebr. I hemusphere.

In the above Fig. of human brain the 31 vertices are marked in the following manner :

1,2	**...**	**Vertex**	**1**
3	**...**	**''**	**2**
4	**...**	**"**	**3**
5	**...**	**"**	**4**
5A	**...**	**"**	**5**
5B	**...**	**"**	**6**

ISSN 2229-5518

6A	...	"	7
……………………..			
42	...	"	27
44	...	"	28
45	...	"	29
46	...	"	30
47	...	"	31

In the (I,j) place of the following table the number indicates the distance (in cm.) of the V1 th vertex from the Vj the vertex

1, 1.06, 1.03, 0.06, 2000000, 1.05, 2, 2.02, 3.01, 1, .005, 1.05, 3.05, 5.06, 6.05, 6, 4.02, 3.04, 2.06, 4, 3.02, 2.06, 5.03, 2.01, 3.04, 3, 3.06, 4.09, 5.01, 5

2.04, 3, 2.07, 0.08, 1.05, 2000000, 3, 3, 4.05, 2, 1.05, 2.05, 5. 4.08, 7.01, 7.09, 7.03, 3.01, 2.06, 2.02, 4.05, 4, 3.05, 6.05, 1.06, 4.05, 4.02, 5, 6.02, 6.05, 6.04

1, 0.04, 2.01, 3, 2, 3, 2000000, 1.05, 3, 1.05, 1.08, 1.06, 1.06, 1.02, 3.06, 4.04, 3.06, 5.06, 4.07, 4.04, 3.02, 2.06, 2, 3.05, 3.04, 1.07, 1.06, 1.06, 3, 3, 3.01

2.01, 1.09, 1, 3.02, 2.02, 3, 1.05, 2000000, 3, 2.05, 2.03, 3.06, 2.02, 3.05, 4.07, 4.06, 6.02, 5.06, 1, 4.07, 4.02, 3.05, 4.08, 4.05, 3.02, 2.09, 4, 4.09, 4.01

1.09, 1.05, 3.05, 4.01, 3.01, 4.05, 3, 3, 2000000, 2.01, 2.08, 2, 2.01, 2.08, 2, 2.01, 0.09, 3.02, 3.02, 3.05, 2.06, 5.05, 4.07, 4.02, 2, 1.05, 1.01, 2, 3.08, 0.03, 0.04, 1.06, 2.01, 1.05

0.02, .09, 2.02, 1.07, 1, 2, 1.05, 2.05, 2.01, 2000000, .05, .05, 3, 2.06, 5.01, 6, 5.01, 3.06, 3.03, 2.05, 3, 2, 1.05, 4.03, 1.09, 2.05, 2, 2.08, 4.01, 4.01, 4.01

.06, 1.01, 1.01, .05, 1.05, 1.08, 2.03, 2.08, .05, 2000000, 1, 3.04, 3.01, 5.03, 6.02, 5, .06, 3.07, 3.01, 2.02, 2.04, 2.06, 2.01, 4.09, 1.06, 3, 2.06, 3.02, 4.05, 5, 4.08

.06, .09, 2.08, 2.04, 1.05, 2.05, 1.08, 3.06, 2.05, 1, 2000000, 3.03, 2.08, 5, 5.06, 4.07, 3.05, 2.09, 2.03, 2.01, 1.05, 0.09, 3.09, 1.07, 1.09, 1.05, 2.04, 3.08, 4.02, 3.08

03, 0.04, 3, 4.03, 4.05

1.06, 1.06, 2.01, 3, 3.04, 3.04, 2000000, 1, 2, 2, 3.01, 7, 6.05, 6, 4.03, 4, 3.03, 3.04, 5.02, 2.056, 1.08, 1.2, 2.06

2.02, 1.08, 3.03, 3.05, 4.01, 2.02, 1.09, 2.03, 3.02, 1, 2000000, 2.03, 2.03, 2.04, 6.04, 5.03, 3.0121, 2.01, 2.04, 4, 01, 1.04, 1.05, 1.09

4.07, 4.02, 5, 6.06, 5.07, 4.03, 3.05, 3.02, 5.03, 3, 2, 2.03, 2000000, 1, 1.07, 8.07, 8.04, 7, .01, 5, 4.06, 3, 7091, 3.01, 3.05, 1.06, 1.03, 2.02

4.08, 5.08, 6, 06, 05, 7.01, 4.04, 6.05, 6, 6.02, 5.02, 2.03, 1, 2000000, 1, 9.02, 8.06, 8, 5.04, 8.1, 2.07, 3.4, 3, 1.06, 1.01, 2, 4.09, 4.03, 5.08, 6.05, 7.03, 4.03, 2.06, 5.06, 4.03, 2.04, 1.04, 200000, 8, 1, 7.02, 4.01, 5.6, .08, 3.01, 2.08, 2.08, .08, .09

4.01, 4.07, 5.03, 5.0, 3.02, 6.02, 5.05, 3.05, 4.03, 7, 7.08, 9.05, 2, 2000000, 1, 8.02, 4.4, 3.07, 6.06, 5.012, 4.07, 6.02, 7.02, 8, 7

3.06, .04, 5.01, 3.01, 3.03, 2.07, 5.03, 5.03, 3, 1, 6.01, 5.08, 8.06, 7, 6, 1, 2000000, 0.01, 3.05, 3.05, 6.1, 4.03, 4.03, 6.08, 7.03, 6.06

3, 3.04, 4.05, 2.08, 2.06, 2.02, 4.03, 5.01, 4.02, 2.02, 2.06, 3, 7.04, 7.02, 8.02, .05, 2000000, 3.01, 2.09, 2.08, 3.09, 4.09, 6.02, 6.08, 6

3, 2.08, 5.01, 4.07, 4, 4.05, 8.04, 4.32, 3.02, 4.03, 3.01, 5.04, 4, 3.05, 3.01, 2000000, .05, 1.02, 2.07, 1.07, 1.05, 2.04, 4.02, 3.02

2.01, 4.03, 4.03, 3.03, 4, 2.04, 1.05, 2, 2.06, 1.06, 4, 5, 4.01, 4.01, 4, 3.05, 2, .098, .05, 2000000, .06, 2.09, 2.06, 1.06, 1.02, 3.02, 3.07

.04, 1.04, 4.04, 2.06, 3.05, 2, 3.05, 1.05, 2.05, 9, 2.01, 4.06, 5, 5, 3.09, 3.03, 2.05, 1.08, 2000000, 3, 2.05, 1.01, .07, 1, 3.02, 3.06, 3

4.01, 3.06, 5.05, 5, 6.05, 3.05, 4.08, 3, 4.09, 3.09, 2.04, 3, 2.03, 6.07, 6.03, 3, 2.09, 3, 2000000, 3.01, 1.06, 2, 1.06, 1.01, 1.04

2.01, 2.01, 2.01, 2.01, 3.04, 4.004, 4.05, 3.08, 1.09, 1.09, 1.06, 5.04, 7.01, 7.06, 1.08, 1.06, 3.06, 2.05, 3.05, 2000000, 3.04, 4.04, 5.03, 6.05, 5.08

2.01, 1.06, 2.09, 3.03, 4.04, 1.06, 3.04, .03, 3, 1.03, 2.06, 1.012, 1.04, 2.09, 5.01, 4, 3, 4.08, 1.02, 1.02, 1.06, 3.07, 2000000, 2, 4.03, 5.08, 6.01, 5.06

1.08, 1.04, 3.04, 4.13, 4.02, 1.06, 3.06, 2, 2.06, 1.05, 2.02, 1.04, 3.05, 4.03, 4.03, 3.08, 1.05, 1.01, .07, 2, .02, 2000000, .08, 2.01, 2.06, 2

3.06, 2, 3.08, 4.06, 3.06, 5, 4.2, .09, .03, 2.08, 3.08, 2, .04, 1.08, .06, 3, 2.01, 5.01, 4.09, 2.06, 2, 1, 1.06, 4.03, 4.03, .08, 2000000, 1, 1.05, .04

3.06, 3.02, 1, 5.01, 4.09, 6.02, 3, 4, 1.06, 4.01, 4.03, 3008, 2.01, 1.06, 1.06, .08, 7.2, 6.06, 3.04, 3.01, 2.01, 5.08, 5.01, 2.01, 1, 2000000, .05, .04

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4.43, .05, 5, 6.01, 5.01, 6.05, 3, 3.09, 2.1, 4.05, 5, 4.02, 3, 1.09, 1.02, 1.01, .07, 8, 7.03, 6.08, 4.03, 3.07, 3.06, 1.06, 6.01, 5.01, 2.01, 1.05, .05, 2000000, .08

3.08, 3.02, 5.01, 6.5, 6.04, 3.01, 4.01, 1.05, 4.01, 4.08, 3.08, 2.06, 1.07, 2.02, .09, 7, 6.06, 6, 3.02, 3, 3.06, 5.06, 5.06, 2, .04, .04, .08, 2000000.

The shortest paths from one vertex to another vertex and the shortest lengths has been obtained . Length of shortest path between vertex 28 and vertex 29 is .08, length of shortest path between vertex 28 and 30 is .12, length of shortest path between vertex 28 and 31 is .04.

The path of the shortest spanning tree is (Starting vertex 28) :

V_{28} To V_9; V_9 To V_{27}; V_{27} To V_{26}; V_{28} To V_{31}; V_{31} To V_{29}; V_{29} To V_{30}; V_{31} To V_{24}; V_{28} To V_{14}; V_{30} To V_{17}; V_{27} To V_{23}; V_{23} To V_{22} To V_{21}; V_{23} To V_{12}; V_{12} To V_{10}; V_{10} To V_1; V_{10} To V_{11}; V_{11} To V_5; V_1 To V_2; V_2 To V_7; V_5 To V_4; V_4 To V_6; V_1 To V_{13}; V_{23} To V_3, V_{17} To V_{16}; V_{16} To V_{15}; V_3 To V_8; V_{11} To V_{25}, V_{25} To V_{20}; V_{20} To V_{19}; V_{19} To V_{18};

The length of the shortest spanning tree is = 7.54

<u>Conclusion :</u>

This is economic also. Regarding connections in brain the result can be applied. We know memory can be increased by associating one thing with another thing or things. By associating one vertex with it's nearest vertex by following shortest path or by associating one vertex with another vertices by following the path of the shortest spanning tree of all these vertices which are to be associated memory of that vertex can be increased and that vertex can be remembered in a minimum time. Memory of a computer can be increased.

If the graph of the solution of a problem can be drawn by some vertices and by some edges then draw all graphs of all possible solutions. Then find out the shortest path (shortest spanning tree in case of a solution having more than one part) of the starting vertex from the vertex of final solution. If we follow that shortest path for the solution of the problem then we will be able to solve that problem in a minimum time. This is more fruitful when we solve same type of problems repeatedly. If we follow this method for all problems then not only we can solve a problem in a minimum time, we shall also be able to increase our I.Q at the same time. First of all by electrical waves from outside and by some mental exercise all vertices and all edges in the brain should be made most active (all connections between all vertices should be made) and then following the above method we can reach to maximum I.Q. Computer brain in respect of these problems can be improved to the maximum level (by minimising the execution time) by the same method and by following the same structure in brain.

REFERENCE

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