**Determination of Different Sizes of Partitioning Clusters in a Highly Connected Graph Using Minimum Sub-cycles**

**Content of Abstract**

*- Graph Representation, even in its simplest form, has many applications (give examples). These graph representations usually are highly connected.*

- There are different types of graph clustering.

- Once such type is Partitioning Clustering.

- In general, graph clustering is an NP hard problem.

*- Therefore, it is possible to have different forms of clusters, different number of clusters with the same density in a highly connected graph.*

*- In practice, knowing different sizes of clusters with similar density is advantageous (give an example of a real application)*

- A common approach is to cluster a graph by means of using different shapes (commonly known as ‘clique’

*- The work presents a novel algorithm* *to determining different sizes of Partitioning Clusters in a Highly Connected Graph by using minimum cycles as cliques.*

*- The Partitioning Clustering Algorithm in this work adopts a Greedy Strategy to determine different sizes of clusters with similar degrees of density*

- Another necessary consideration is the degrees of density of a cluster.

- In this work, density of a cluster is user-determined.

- The ‘Difference Density’ is used as a guidance in Partitioning Clustering.

- The algorithm is tested on various highly connected graphs with different number of nodes and edges and also degrees of density.

*- The results of determination of different sizes of Partitioning Clusters of two highly connected graphs, with different values of ‘difference density’, are presented.*

- Two other metrics ‘Conductance’ and ‘Coverage’ are used as measures of Clustering quality.