

## Abstract

Anonymization of network simply means hiding the identity of user vertices in the network. Anonymization is the technique used for preventing the data loss or altering in the data transmission. There are many ways for Anonymization of the network, and in this report we did the K-degree Anonymization of network graph. We have also proposed a new approach, (Average degree based algorithm) **ADB algorithm** for K-degree Anonymization of network. In ADB algorithm we implemented **delete\_edge** and **insert\_edge** method for deleting an edge and inserting an edge respectively. Here we have applied our algorithm on a simple vertex labeled graph (where each vertices have their unique identity). ADB algorithm visits all vertices in the graph one by one starting from a randomly selected vertex (say  $V$ ), after that we move to the neighbouring vertices of the vertex  $V$  (according to the path length) and find the vertex where the degree of the vertex is more than the threshold value  $D(V)$ , and we apply the delete\_edge algorithm for deleting the edge at that vertex. This method is recursively done for all the vertices until all vertices are visited. Now again we repeat the process from vertex  $V$ , but this time we find the neighbouring vertices having value less than threshold and apply insert\_edge for adding an edge at the vertices where required. We choose the threshold according to average degree of all vertices of graph for performing minimum number of deletion and addition of edges. And as a result after the implementation of the ADB algorithm we are able to do  $K$ -Anonymization of the graph without it being disconnected and that also with very few modification of edges.

***Index terms***— Anonymization, ADB algorithm, vertex-Labeled graph