Abstract

In this paper we propose a new approximation algorithm for calculating the min-cut tree of an undirected edge-weighted graph. Our algorithm runs in $O(V^2 \log V + V^2 \cdot d)$, where $V$ is the number of vertices in the given graph and $d$ is the degree of the graph. It is a significant improvement over time complexities of existing solutions. However, because of an assumption it does not produce correct result for all sorts of graphs but for the dense graphs success rate is more than 90%. Moreover in the unsuccessful cases, the deviation from actual result is very less (usually for less than 5% pairs) and for most of the pairs we obtain correct values of max-flow or min-cut.

References

A New Technique for Finding Min-cut Tree

- Flake G. W., Tarjan R. E. and Tsioutsiouliklis K. "Graph Clustering and Minimum Cut Trees." Internet Mathematics, volume 1, issue 4, 385-408.

**Index Terms**

Computer Science  Algorithms

**Keywords**

Undirected edge-weighted graph  min-cut tree  dense graphs  max-flow  min-cut