Efficient computation of Flesh Graph

Anupam Roy

Department of Computer Science and Engineering, Indian Institute of Technology Kanpur

Abstract—Let $G = (V, E)$ be an undirected multi-graph on $n = |V|$ vertices and $m = |E|$ edges, and $S \subseteq V$ be a subset of vertices called the Steiner Set. A set of edges with minimum cardinality whose removal disconnects at least two vertices of the Steiner set S in G is called a Steiner mincut. Dinitz and Vainshtein designed an elegant data structure in 1994 known as the Connectivity Carcass. This structure compactly stores and characterizes all the Steiner mincuts in G. The structure consists of three components – the flesh graph, the skeleton, and the projection mapping. There already exist efficient algorithms to compute the skeleton. We design an algorithm to compute the flesh graph in $O(|S|)$ maxflow computations.

References