

1 Disjoint Path Analysis

Small correction/clarification to analysis of Greedy-Disjoint-Paths algorithm. We consider the paths P_i^* in I_s^* . Each such path P_i^* is either in I_s^* or if not, it is **blocked** by an earlier path P_j in I_s . We extend the definition of blocked to mean either that P_j has an arc on path P_i^* or that P_j connects the same pair of vertices as P_i^* (either of these factors would prevent our Greedy algorithm from choosing P_i^*).

Under this new definition each path in I_s can be associated with the paths in I_s^* it blocks. There are at most $\sqrt{m} + 1$ such paths for each path in I_s (since it may block one path which has no edges in common, but which connects the same end points). Thus

$$|I_s| \times (\sqrt{m} + 1) \geq |I_s^*|.$$

And since we also used an extra element to pair with the long paths in I^* , we get:

$$(|I| + 1) \times (\sqrt{m} + 1) \geq |I^*|$$