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A Graph Theoretic Algorithm for Bandwidth Improvement in Computer Networks

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Abstract : Given two distinct vertices (nodes) source s and target t of a graph G = (V, E), the two node-disjoint paths problem is to identify two node-disjoint paths between s ∈ V and t ∈ V . Two paths are node-disjoint if they have no common intermediate vertices. In this paper, we present an algorithm with O(m)-time complexity for finding two node-disjoint paths between s and t in arbitrary graphs where m is the number of edges. The proposed algorithm has a wide range of applications in ensuring reliability and security of sensor, mobile and fixed communication networks.

Keywords : disjoint paths, distributed systems, fault-tolerance, network routing, security
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