A LINEAR-PROGRAMMING APPROACH FOR THE WEIGHTED GRAPH MATCHING PROBLEM

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Summary

A linear programming (LP) approach is proposed for the weighted graph matching problem. A linear program is obtained by formulating the graph matching problem in L1 norm and then transforming the resulting quadratic optimization problem to a linear one. The linear program is solved using a Simplex-based algorithm. Then, approximate 0-1 integer solutions are obtained by applying the Hungarian method on the real solutions of the linear program. The complexity of the proposed algorithm is polynomial time, and it is $O(n6\ L)$ for matching graphs of size n. The developed algorithm is compared to two other algorithms. One is based on an eigendecomposition approach and the other on a symmetric polynomial transform. Experimental results showed that the LP approach is superior in matching graphs than both other methods.

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