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*Counting Backtracking Path Searches in Network Graphs.*

Most of the networking optimization and search algorithms use a node labeling procedure to reduce the number of search paths used in the problem's algorithms. But, the approach I used, to solve problems of unit routing through movement corridors of digital map networks, saves the partial paths used in the search and backtracks through a more complete enumeration of non-cyclic goal searches: ['A Logic Programming Approach to Network Flow Algorithms', Transactions of the Eighth Army Conference on Applied Mathematics and Computing, ARO Report 91-1, Durham, North Carolina]. It is an interesting problem in combinatorial graph theory to compute formulas, in terms of in-going and out-going edges from graph nodes, for the number of path searches used in these algorithms. In this talk I will define several terms related to these computations and suggest some results and formulas that may have applications to many other problems in network optimization and AI expert system, knowledge software design. (Received September 06, 2012)