Finest Trail Collection using CSPF Schemes

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Abstract: In particular, finding the cheapest delay-constrained path is critical for real-time data flows such as voice/video calls. Because it is NP-complete, much research has been designing heuristic algorithms that solve the -approximation of the problem with an adjustable accuracy. A common approach is to discretize (i.e., scale and round) the link delay or link cost, which transforms the original problem to a simpler one solvable in polynomial time. The efficiency of the algorithms directly relates to the magnitude of the errors introduced during discretization. In this paper, we propose two techniques that reduce the discretization errors, which allow faster algorithms to be designed. Reducing the overhead of computing constrained shortest paths is practically important for the successful design of a high-throughput QoS router, which is limited at both processing power and memory space. Our simulations show that the new algorithms reduce the execution time by an order of magnitude on power-law topologies with 1000 nodes. The reduction in memory space is similar.