Traveling in Canada: Shortest Paths with Blocked Edges

Marco Bender

10. Dezember 2013

Abstract

We consider the k-Canadian Traveller Problem, which asks for a shortest path between two nodes s and t in an undirected graph, where up to k edges may be blocked. An online algorithm learns about a blocked edge when reaching one of its endpoints. Recently, it has been shown that no randomized online algorithm can be better than $(k + 1)$-competitive, even if all s-t-paths are node-disjoint. We show that the bound is tight by constructing a randomized online algorithm for this case that achieves the ratio against an oblivious adversary and is therefore best possible.