Top-k Competitive Location Selection over Moving Objects

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Abstract: The location selection (LS) problem identifies an optimal site to place a new facility such that its influence on given objects can be maximized. With the proliferation of GPS-enabled mobile devices, LS studies have made progress for moving objects. However, state-of-the-art LS techniques over moving objects assume the new facility has no competitor, which is too restrictive and unrealistic for real-world business. In this paper we study Competitive Location Selection over Moving objects (CLS-M), which takes into account competition against existing facilities in mobile scenarios. We present a competition-based influence score model to evaluate the influence of a candidate. To solve the problem, we propose an influence pruning algorithm to prune objects who are either influenced by inferior candidates or affected by no candidate. Experimental study over two real-world datasets demonstrates that the proposed algorithm outperforms state-of-the-art LS techniques in terms of efficiency.

Keywords: Competitive location selection; Moving objects; Pruning strategy; Spatial data