

DOCTORAL THESIS

Answering why-not questions on spatial keyword top-k queries

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Abstract

With the continued proliferation of location-based services, a growing number of web-accessible data objects are geo-tagged and have text descriptions. Spatial keyword top- k queries retrieve k such objects with the best score according to a ranking function that takes into account a query location and query keywords. However, it is in some cases difficult for users to specify appropriate query parameters. After a user issues an initial query and gets back the result, the user may find that some expected objects are missing and may wonder why. Answering the resulting why-not questions can aid users in retrieving better results and thus improve the overall utility of the query functionality. While spatial keyword querying has been studied intensively, no proposals exist for how to offer users explanations of why such expected objects are missing from results. In this dissertation, we take the first step to study the *why-not* questions on spatial keyword top- k queries. We provide techniques that allow different revisions of spatial keyword queries such that their results include one or more desired, but missing objects. Detailed problem analysis and extensive experimental studies consistently demonstrate the effectiveness and robustness of our proposed techniques in a broad range of settings.

Keywords: Spatial Keyword Top- k Query, Why-Not Question, Query Refinement

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