Pruned Labeling Algorithms: Fast, Exact, Dynamic, Simple and General Indexing Scheme for Shortest-Path Queries

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ABSTRACT

Shortest-paths and distances are two of the most fundamental notions for pairs of nodes on a network, and thus they play an important role in a wide range of applications such as network analysis and network-aware search. In this talk, I will introduce our indexing method for efficiently answering shortest-paths, referred to as pruned landmark labeling (SIGMOD'13). In spite of its simplicity, it significantly outperforms previous indexing methods in both scalability and query time. Moreover, interestingly, it turned out that the algorithm automatically exploits the common structures of real networks. We also briefly mention its variants: pruned path labeling (CIKM'13), pruned highway labeling (ALENEX'14) and historical pruned landmark labeling (WWW'14).

Short Biography

Takuya Akiba is a Ph.D. candidate in University of Tokyo and also a research fellow of Japan Society for the Promotion of Science. His research topic is to develop efficient algorithms for real-world large-scale networks such as social networks and web graphs by exploiting common structures of these networks. His papers have been accepted by world-class conferences such as WWW 2014, SIGMOD 2013, CIKM 2013 and so forth. He also achieved the 1st place in ICFP Programming Contest 2013 and the Bronze medal in ACM ICPC 2012 World Finals.

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