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Efficient skyline processing algorithm over dynamic and incomplete database (Conference Paper)

Dehaki, G.B.[b], Ibrahim, H.[b], Udzir, N.I.[b], Alwan, A.A.[a], Sidi, F.[b]

[a]Department of Computer Science, International Islamic University Malaysia, Kuala Lumpur, Malaysia
[b]Department of Computer Science, Universiti Putra Malaysia, Selangor, D. E., Malaysia

Abstract

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The notion of skyline processing is to discover the data items that are not dominated by any other data items. It is a well-known technique that is utilised to determine the best results that meet the user's preferences. However, the rapid growth and frequent changes of data make the process of identifying skyline points no longer a trivial task. Most of the existing skyline approaches assume that the database is complete and static. However, in real world scenario, this assumption is not valid especially in multidimensional databases in which some dimensions have missing values while they are dynamic due to the continual modifications made towards them. Blindly examining the whole database after changes are made to identify the skyline points is inappropriate as not all data items are affected by the changes. Hence, in this study we propose a skyline algorithm , DyIn- Skyline , which is capable of identifying skyline points over dynamic and incomplete databases, by exploiting only those data items that are affected by the changes. Several experiments have been conducted and the results show that our proposed algorithm outperforms the previous work by reducing the number of pairwise comparisons in the range of 50% to 73%.

SciVal Topic Prominence

Topic: Algorithms | Query processing | skyline computation

Prominence percentile: 92.460

Author keywords

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Indexed keywords

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Engineering uncontrolled terms: Dynamic database | Missing values | Multidimensional database | Pair-wise comparison | Preference queries | Real-world scenario | Skyline Processing | Skyline query

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References (22)

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1 Alwan, A.A., Ibrahim, H., Udzir, N.I., Sidi, F.
An Efficient Approach for Processing Skyline Queries in Incomplete Multidimensional Database

(2016) *Arabian Journal for Science and Engineering*, 41 (8), pp. 2927-2943. Cited 7 times.
http://www.springerlink.com/content/1319-8025
doi: 10.1007/s13369-016-2048-z

View at Publisher

2 Alwan, A., Ibrahim, H., Udzir, N.I., Sidi, F.
Estimating Missing Values of Skylines in In-complete Database
(2013) *2th International Conference on Digital Enterprise and Information Systems*, pp. 220-229. Cited 3 times.

3 Babanejad, G., Ibrahim, H., Udzir, N.I., Sidi, F., Alwan, A.A.
Finding skyline points over dynamic incomplete database
(2014) *Malaysian National Conference on Databases*, pp. 60-64. Cited 2 times.

4 Bharuka, R., Kumar, P.S.
Finding skylines for incomplete data

(2013) *Conferences in Research and Practice in Information Technology Series*, 137, pp. 109-118. Cited 13 times.
ISBN: 978-192177022-7

5 Balke, W.T., Güntzer, U.
Multi-objective Query Processing for Database Systems
(2004) *13th International Conference on Very Large Data Bases*, pp. 936-947. Cited 71 times.

6 Bartolini, I., Ciaccia, P., Patella, M.
SaLSa: Computing the skyline without scanning the whole sky

(2006) *International Conference on Information and Knowledge Management, Proceedings*, pp. 405-414. Cited 78 times.
ISBN: 1595934332; 978-159593433-8
doi: 10.1145/1183614.1183674

View at Publisher