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SCSA: Evaluating skyline queries in incomplete data (Article)

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Abstract

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Skyline queries have been extensively incorporated in various contemporary database applications. The list includes but is not limited to multi-criteria decision-making systems, decision support systems, and recommendation systems. Due to its great benefits and wide application range, many skyline algorithms have already been proposed in numerous data settings. Nonetheless, most researchers presume the completion of data meaning that all data item values are available. Since this assumption cannot be sustained in a large number of real-world database applications, the existing algorithms are rather inadequate to be directly applied on a database with incomplete data. In such cases, processing skyline queries on incomplete data incur exhaustive pairwise comparisons between data items, which may lead to loss of the transitivity property of the skyline technique. Losing the transitivity property may in turn give rise to the problem of cyclic dominance. In order to address these issues, we propose a new skyline algorithm called Sorting-based Cluster Skyline Algorithm (SCSA) that combines the sorting and partitioning techniques and simplifies the skyline computation on an incomplete dataset. These two techniques help boost the skyline process and avoid many unnecessary pairwise comparisons between data items to prune the dominated data items. The comprehensive experiments carried out on both synthetic and real-life datasets demonstrate the effectiveness and versatility of our approach as compared to the currently used approaches. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

SciVal Topic Prominence ⓘ

Topic: Skyline | Top-K | Query Processing

Prominence percentile: 87.910 ⓘ

Author keywords

Incomplete data | Missing data | Preference queries | Query processing | Skyline | Skyline queries

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References (46)

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1 Börzsönyi, S., Kossmann, D., Stocker, K.
The skyline operator

(2001) *Proceedings - International Conference on Data Engineering*, pp. 421-430. Cited 1751 times.

2 Khalefa, M.E., Mokbel, M.F., Levandoski, J.J.
Skyline query processing for incomplete data

(2008) *Proceedings - International Conference on Data Engineering*, art. no. 4497464, pp. 556-565. Cited 94 times.
ISBN: 978-142441837-4
doi: 10.1109/ICDE.2008.4497464

View at Publisher

3 Alwan, A.A., Ibrahim, H., Udzir, N.I.
A framework for identifying skylines over incomplete data

(2014) *Proceedings - 3rd International Conference on Advanced Computer Science Applications and Technologies, ACSAT 2014*, art. no. 07076873, pp. 79-84. Cited 5 times.
ISBN: 978-147991845-4
doi: 10.1109/ACSAT.2014.21

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(2018) ACM International Conference Proceeding Series

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Gulzar, Y. , Alwan, A.A. , Turaev, S.
(2019) IEEE Access

Processing skyline queries in incomplete database: Issues, challenges and future trends
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(2017) Journal of Computer Science

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