Hierarchical DP-K Anonymous Data Publishing Model Based on Binary Tree

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Abstract—With the acceleration of data opening and sharing process in the power industry, the risk of sensitive data leakage is also gradually increasing. Privacy protection is one of the hot issues of privacy leakage control technology research in data release, and k-anonymity is the hot topic of privacy protection research in recent years. In this paper, we propose a hierarchical DP-K anonymous data release model based on binary tree clustering for the existing k-anonymity scheme and for minimizing the amount of information loss. A binary tree-based clustering algorithm (BTCA) is proposed to classify similar data records into the same equivalent class, which can improve the effect of clustering, reduce the information loss caused by anonymous data set release, and improve the availability of data. The clustered anonymous data sets redistribute different privacy budgets according to the privacy rights of the quasi-identifier attributes, and realize the hierarchical protection of the data with different degrees of sensitivity through the differential privacy noise increase mechanism, which enhances the privacy of the data.

Keyword— K-Anonymous; differential privacy; clustering; binary tree; privacy protection

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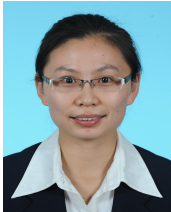
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