

HPPDFIM-HD: Transaction Distortion and Connected Perturbation Approach for Hierarchical Privacy Preserving Distributed Frequent Itemset Mining over Horizontally-Partitioned Dataset

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Abstract : Many algorithms have been proposed to provide privacy preserving in data mining. These protocols are based on two main approaches named as: the perturbation approach and the Cryptographic approach. The first one is based on perturbation of the valuable information while the second one uses cryptographic techniques. The perturbation approach is much more efficient with reduced accuracy while the cryptographic approach can provide solutions with perfect accuracy. However, the cryptographic approach is a much slower method and requires considerable computation and communication overhead. In this paper, a new scalable protocol is proposed which combines the advantages of the perturbation and distortion along with cryptographic approach to perform privacy preserving in distributed frequent itemset mining on horizontally distributed data. Both the privacy and performance characteristics of the proposed protocol are studied empirically.

Keywords : anonymity data, data mining, distributed frequent itemset mining, gaussian perturbation, perturbation approach, privacy preserving data mining

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