



Título: Optimizing querying on multidimensional datasets using Local Differential Privacy

Data: 07/10/2022

Horário: 09h00

Local: Sala de Seminários - Bloco 952

Resumo:

Local Differential Privacy (LDP) allows answering queries on users' data while maintaining their privacy. Queries are often issued on multidimensional datasets with categorical and numeric

dimensions. In this paper, we tackle the problem of answering counting queries over multidimensional datasets with categorical and numeric dimensions under LDP. In the setting without a trusted central agent, the user's private dimensions are firstly perturbed locally to preserve privacy and then sent to an aggregator who will be able to estimate answers to queries. We build our approach on the existing idea of using grids. Mapping users' dimensions into grids which are perturbed and sent to the aggregator so it can estimate the real data distributions to answer different queries on the dimensions collected. Finer-grained grids lead to greater error due to noises, while coarser-grained ones result in greater error due to biases. We propose optimizing the construction of grids taking into consideration several different factors to obtain better accuracy. Also, we propose to adaptively select the LDP algorithm that based on the grid characteristics will provide the better utility. We conduct experiments on real and synthetic datasets and compare our solution with existing approaches.

Banca examinadora:

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