An Optimal Differentially Private Data Release Mechanism with Constrained Error

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Problems & Ideas

- Problems: Accuracy-first methods limit the error to a fixed bound. But the noise does not always conform to Laplacian distribution.
- Privacy-first schemes improve the accuracy of publishing results by multiple. But the release method to achieve optimal data availability is still worth investigated.

- Ideas: To strictly meet DP, we generate needed noise in a truncated form, while limiting the noisy error to a fixed bound. Besides, we take advantage of particle filter, to obtain the optimal availability of published data.

Main Contributions

- our solution has a lower variance of noise than theother schemes on four datasets.
- current methods have not change the mean of original data intensely.