DP – UserPro : differentially private user profile construction and publication

Zheng HUO, Ping HE, Lisha HU, Huanyu ZHAO

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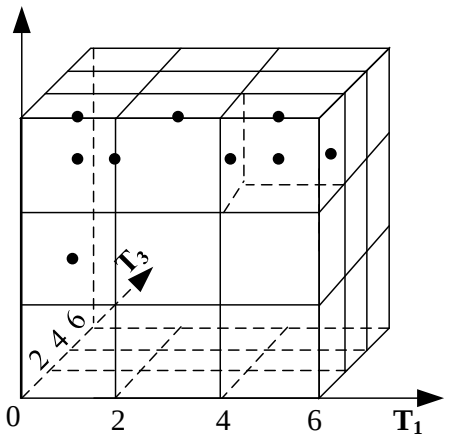
Problems & Ideas

- User profile is widely used in the age of big data, while constructing user profile may cause serious privacy leakage
  - Many of the collected data are quite private, data might leak privacy
  - The procedure of constructing user profiles may leak privacy
- Ideas: Protect the data privacy in the procedure of user profile construction.
  - Laplace noises should be added to disturb the original values of the user tag space
  - Privately choose Top-*k* most important to represent the features of the clusters

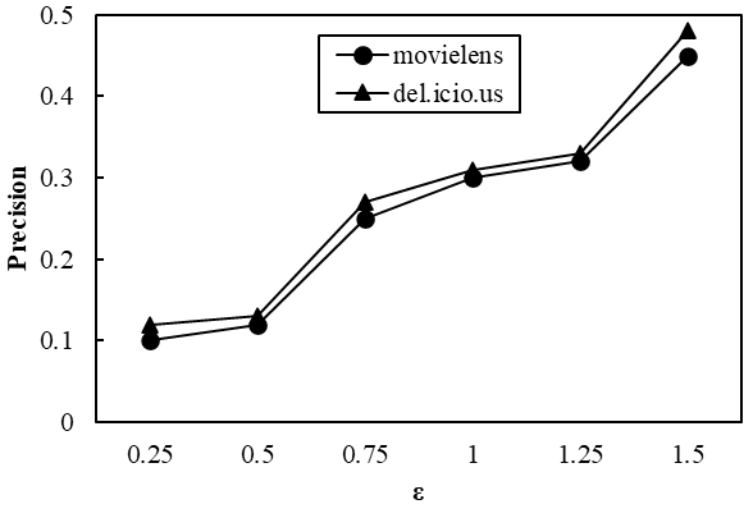


Main Contributions

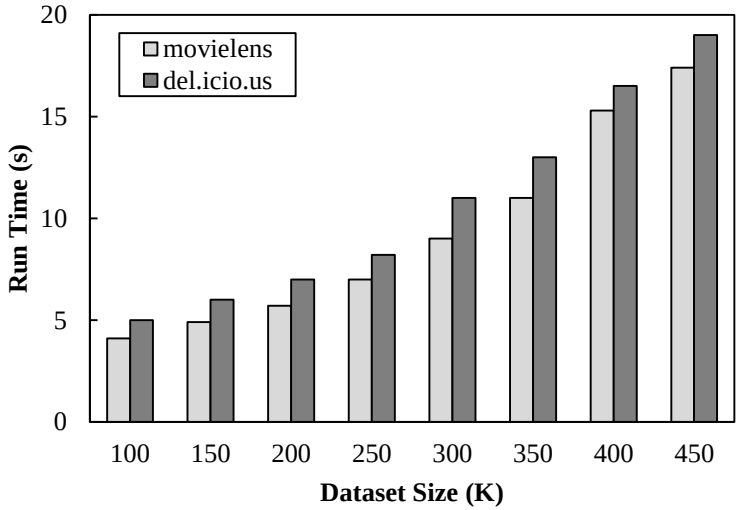
- A differentially private density-based clustering algorithm DP-CLIQUE is proposed. Multi-dimensional tag space is divided into cells, Laplace noises are added into the count values of each cell.
- A differentially private selection method is proposed to choose Top-*k* most important tags in each cluster, based on the exponential mechanism.
- Experimental evaluations of DP-UserPro are carried out in the following.

Main Contributions

- Precision of DP-UserPro on two datasets

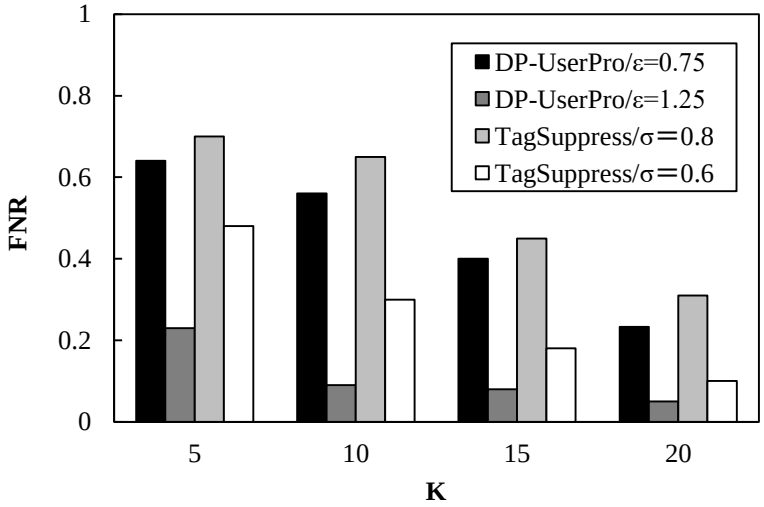


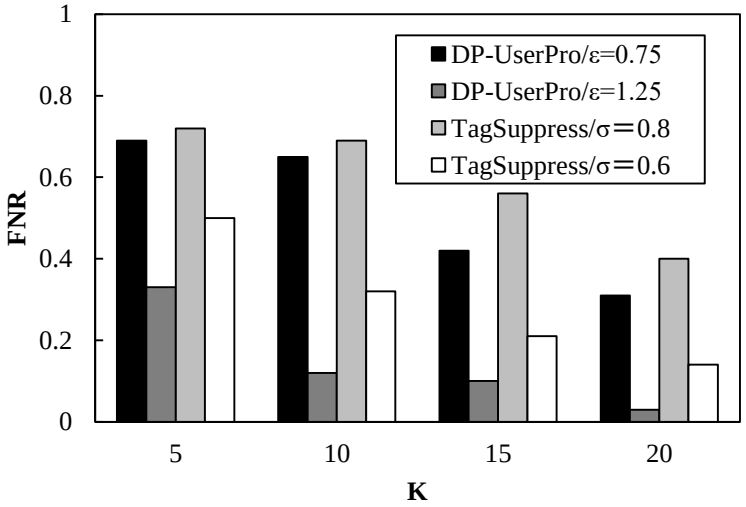
- Runtime of DP-UserPro on two datasets



Main Contributions

- FNR comparison of DP-UserPro and TagSuppress on del.ici.ous and movielens





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