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**PRIVACY-PRESERVING SELECTIVE AGGREGATION OF ONLINE USER BEHAVIOR DATA**

**ABSTRACT:**

Tons of online user behavior data are being generated every day on the booming and ubiquitous Internet. Growing efforts have been devoted to mining the abundant behavior data to extract valuable information for research purposes or business interests. However, online users' privacy is thus under the risk of being exposed to third-parties. The last decade has witnessed a body of research works trying to perform data aggregation in a privacy-preserving way. Most of existing methods guarantee strong privacy protection yet at the cost of very limited aggregation operations, such as allowing only summation, which hardly satisfies the need of behavior analysis. In this paper, we propose a scheme PPSA, which encrypts users' sensitive data to prevent privacy disclosure from both outside analysts and the aggregation service provider, and fully supports selective aggregate functions for online user behavior analysis while guaranteeing differential privacy. We have implemented our method and evaluated its performance using a trace-driven evaluation based on a real online behavior dataset. Experiment results show that our scheme effectively supports both overall aggregate queries and various selective aggregate queries with acceptable computation and communication overheads.