Protecting Your Shopping Preference with Differential Privacy

ABSTRACT:

Online banks may disclose consumers' shoppingpreferences due to various attacks. With differential privacy,each consumer can disturb his consumption amount locallybefore sending it to online banks. However, directly applyingdifferential privacy in online banks will incur problems in realitybecause existing differential privacy schemes do not considerhandling the noise boundary problem. In this paper, we propose an Optimized Differential Private Online Transaction scheme(O-DIOR) for online banks to set boundaries of consumptionamounts with added noises. We then revise O-DIOR to design aRO-DIOR scheme to select different boundaries while satisfyingthe differential privacy definition. Moreover, we provide in-depththeoretical analysis to prove that our schemes are capable tosatisfy the differential privacy constraint. Finally, to evaluatethe effectiveness, we have implemented our schemes in mobilepayment experiments. Experimental results illustrate that therelevance between the consumption amount and online bankamount is reduced significantly, and the privacy losses are lessthan 0.5 in terms of mutual information.

SYSTEM REQUIREMENTS:

HARDWARE REQUIREMENTS:

- System : Pentium i3 Processor.
- Hard Disk : 500 GB.
- Monitor : 15’’ LED
- Input Devices : Keyboard, Mouse
- Ram : 4 GB

SOFTWARE REQUIREMENTS:

- Operating system : Windows 10.
- Coding Language : Java
- Web Framework : Flask

REFERENCE:

J. Lin, J. Niu, X. Liu and M. Guizani, "Protecting Your Shopping Preference With Differential Privacy," in IEEE Transactions on Mobile Computing, vol. 20, no. 5, pp. 1965-1978, 1 May 2021, doi: 10.1109/TMC.2020.2972001.