Towards Provable Privacy Guarantees in the Age of User Profiling

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A precise profiling of user activities lies at the core of online advertising, web analytics, and other technologies that are of vital importance for the business model underlying the large majority of today's Internet services. This state of affairs makes it urgent to rigorously understand the privacy risks inherent to such technologies and to develop practical solutions for the privacy-preserving collection and processing of large amounts of user data.

In this talk, I will overview the state-of-the-art in this field, showing that it is possible to provide the user with provable privacy guarantees without affecting the currently predominant business models, with a specific focus on online advertising and web analytics.
I will focus on two emerging privacy technologies that turned out to be particularly useful in this context, namely the obliviousness of user accesses to data outsourced to third parties and the differential privacy of statistical queries. I will finally conclude highlighting limitations of current approaches and indicating some important research directions.