TWC SBE: Small: Towards an Economic Foundation of Privacy-Preserving Data Analytics: Incentive Mechanisms and Fundamental Limits

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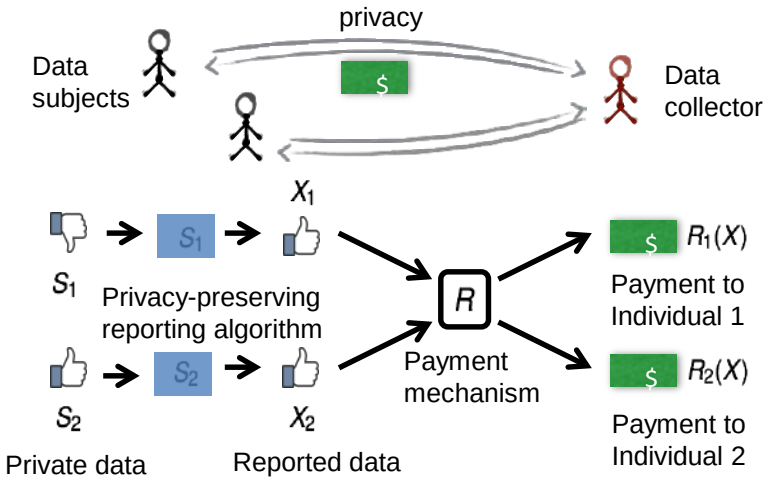
Challenge:

- Data privacy is emerging as one of the most serious concerns of big data analytics.
- Question: whether big-data and privacy can go hand-in-hand or giving up data privacy is inevitable in the big-data era?



Scientific Impact:

With the reward (incentive) as the bridge, this project will offer a full-fledged characterization of the paradox of data privacy concerned by an individual versus data utility concerned by the data collector.

Solution:

This project will develop an economic foundation of private-preserving data analytics, including

- effective incentive mechanisms for data collectors to collect quality data (controlled by individuals) with minimum cost; and
- private-preserving reporting algorithms that maximize data subjects' payoffs by taking both payment and privacy loss into account.

Broader Impact:

- Enable a paradigm shift from the traditional informed consent for private data collection to the proposed market model based approach.
- Contribute to skilled workforce development in this area of national need, by integrating the research findings with undergraduate and graduate level education, and broadening the participation of minority and underrepresented students.

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