

CAREER: Privacy-Guaranteed Distributed Interactions in Critical Infrastructure Networks



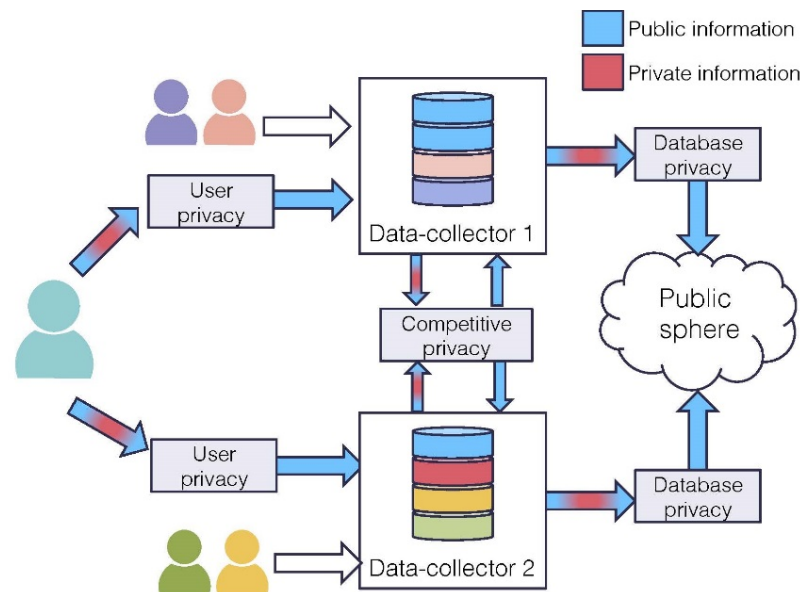
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Challenge:

- Privacy guaranteed data sharing between legitimate entities
- Can retailers profit from consumers with heterogeneous privacy sensitivities?
- Compare privacy measures with rigorous guarantees

Solution:

- Information theoretic (IT) approach guarantees reduction in information leakage over multiple interactions
- (De)-composition theorem
- Introduced a game-theoretic model to understand effect of privacy violations on consumer and retailer behavior



Variety of data sharing, collection, and processing interfaces with privacy challenges or violations

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Scientific Impact:

- Rigorous statistical guarantees on privacy and inference in distributed interactions
- First model to capture heterogeneous expression of consumer privacy sensitivity
- Privacy-aware policies for retailers that use consumer data for targeted profits

Broader Impact:

- Privacy guarantees can enable crucial data exchange between critical infrastructure operators
- Privacy-sensitive targeting ensure retailer profit and consumer trust
- Privacy on Social Networks hands-on demo to middle-and-high school girls at GITD 2017 Phoenix.