A privacy-enhancing scheme against contextual knowledge-based attacks in location-based services

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Problems & Ideas

- Preserving LBS users' privacy under fiercer contextual knowledge-based privacy attacks
- Ideas: Dual Cloaking Anonymity scheme & a novel entropy-based privacy metric
  - Taking *query features of each cell* and *query preferences of users* into account when constructing k-anonymity sets
  - A novel metric named *Confusion degree* measures the consequent privacy level, which quantitatively demonstrates the impact of richer side information on privacy

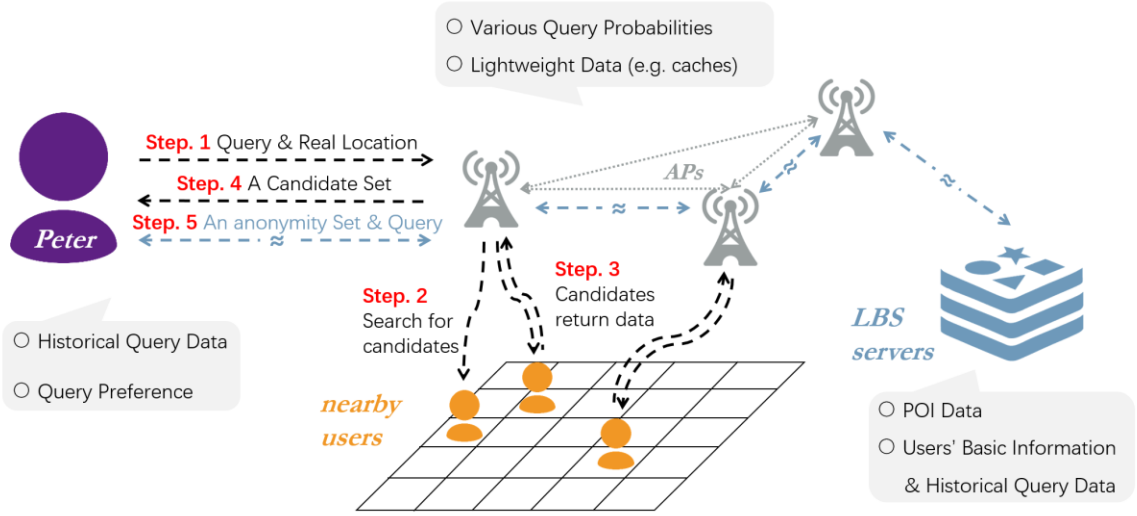
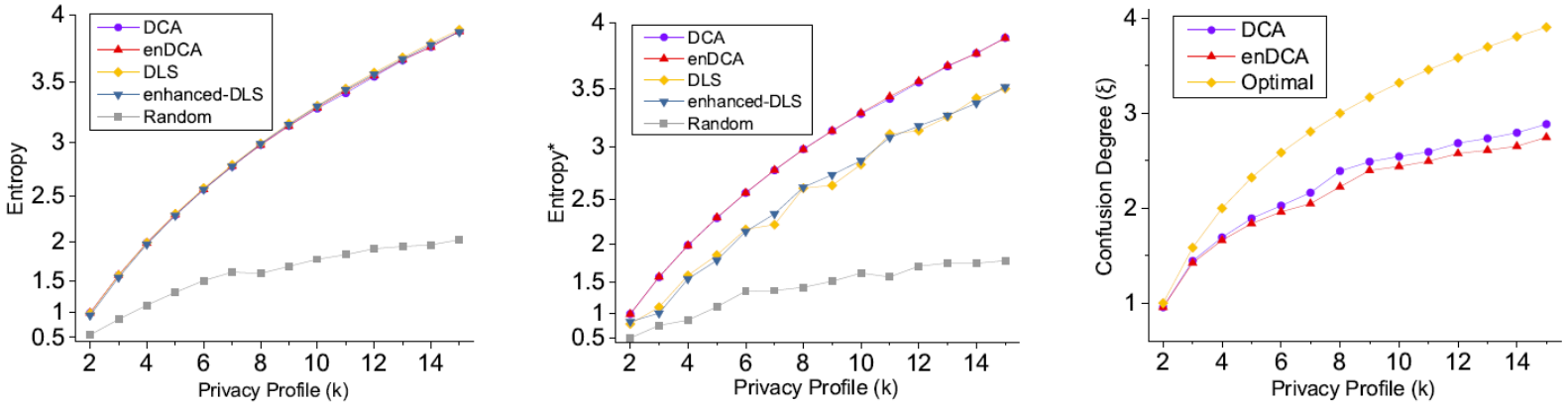


Fig. 2 Schemes Overview

Main Contributions

- **Comparisons among DCA/enhanced-DCA schemes and others (Privacy level)**



(a) k vs. Entropy (b) k vs. Entropy* (c) k vs. ξ

Fig. 3 Effect of privacy profile k on several privacy metrics (on Taxi-2015 dataset): (a)Entropy (with *gross query probability*); (b)Entropy (with *various query probability*); (c)Confusion degree (with *various query probability*)