

Mobile crowd sensing: Incentive mechanism design

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Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=9999920521716&lokasi=lokal>

Abstrak

This SpringerBrief investigates and reviews the development and various applications of mobile crowd sensing (MCS). With the miniaturization of sensors and the popularity of smart mobile devices, MCS becomes a promising solution to efficiently collect different types of information, such as traffic conditions, air quality, temperature and more, which is covered in this brief. The features, novelty, and applications of MCS are elaborated in detail in this brief. In addition, the basic knowledge about auction theory and incentive mechanism design is introduced.

Incentive mechanism design plays a key role in the success of MCS. With an efficient incentive mechanism, it is possible to attract enough mobile users to participate in a MCS system, thus enough high quality sensing data can be collected. Two types of incentive mechanisms with different system models are introduced in this brief. One is the reputation-aware incentive mechanism, and another is the social-aware incentive mechanism.

This SpringerBrief covers the significance and the impacts of both reputation and social relationship of smartphone users (SUs) in MCS and presents extensive simulation results to demonstrate the good performance of the proposed incentive mechanisms compared with some existing counterparts.

The target audience for this SpringerBrief is researchers and engineers in the area of wireless communication and networking, especially those who are interested in the mobile crowd sensing or incentive mechanism design. Meanwhile, it is also intended as a reference guide for advanced level students in the area of wireless communications and computer networks.