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Commentary

A Short Note on Mobile Crowdsensing System

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DESCRIPTION

The widespread adoption of mobile phones, paired with the ever-increasing number of sensors that smartphones are equipped with, has dramatically eased the widespread adoption of crowdsensing systems by lowering hardware requirements and prices to a minimum in recent years. As a result of these circumstances, the number of crowdsensing ideas from academics and industry has increased dramatically. Android is the most popular client platform, while server platforms are primarily web-based, and client-server connections are mostly based on XML or JSON through HTTP. The most common found flaw relates the performance evaluation of various ideas, which frequently fails to do a scalability study, despite the fact that scalability is a vital consideration when targeting very large user populations.

The use of mobile phones has increased dramatically during the last decade. In reality, according to reports from 2021, cell phone subscriptions accounted for 97 percent of all subscriptions or 9064 million people worldwide. Furthermore, the technological advantages given by mobile devices reflect this growth in subscribers. Furthermore, today's mobile devices have a high processing power, many embedded sensors, and different communication technologies (e.g., Wi-Fi, 4G, and Bluetooth) (GPS, gyroscope, accelerometer, microphone, and camera, among others). This technological advancement, combined with the growing number of subscribers, has prompted a community of researchers and developers to build various applications using cell phones as sensors.

The term "participatory sensing" or "people-centered sensing" was coined by pioneering research to describe the emergence of new applications. In all circumstances, the user should be able to collect data from anywhere, at any time, by using mobile sensor devices for data retrieval, processing, and dissemination. Later on, researchers classified this novel paradigm as a "mobile phone sensing" subtype of crowdsensing.

Mobile phone sensing takes advantage of the processing and communication capabilities of current smartphones, which, when paired with one or more sensors, provide an enabler for a variety of applications. Furthermore, mobile crowdsensing relies on a large number of users to collect data from the environment through its integrated sensors, which are then transferred to a server for data mining operations such as data fusion, analysis, and dissemination. Sensors that record participant information (e.g., location, movements) as well as ambient data (e.g., pictures, sounds) are commonly used. Furthermore, some solutions include external sensors, such as pollution sensors and health monitoring sensors, which are integrated into the mobile solution *via* communication interfaces. In this way, mobile crowdsensing opens up new possibilities for bettering living conditions in our digital age.

In the previous five years, researchers have seen a considerable surge in mobile crowdsensing apps. Researchers have concentrated their efforts in areas such as environmental monitoring, transportation and urban sensing, healthcare, social challenges, and so on. Different designs and architectural levels distinguish the various crowdsensing ideas accessible. For example, some scientists offer framework, middleware, or system-level solutions, among other words. These solutions can take a global approach (complete architecture) or merely explain a piece of the architecture by specifying one or more components, regardless of the word employed.

Smartphone-based crowdsensing solutions are becoming increasingly popular due to the numerous benefits they provide. As a result, it becomes critical to present a unified perspective of the various author contributions in order to identify major areas for development. Furthermore, client and server-side technologies and algorithms have advanced greatly, and are frequently provided in a modular fashion, allowing other researchers to include them into their proposed solutions. In terms of improving the data collection process itself, the key difficulties discovered are software flexibility to different types of sensors and power consumption reduction. Task generating language and procedures, data analysis and storage, and providing an adequate interface for task administration by administrators are the most significant enhancements on the server side. SOAP and RESTful technologies are commonly used for client-server communication, and most solutions offer Publish/Subscribe models.

CONFLICT OF INTEREST

Author has nothing to disclose.

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