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Sommario/riassunto

Mobile crowdsensing is a new sensing paradigm that utilizes the intelligence of a crowd of individuals to collect data for mobile purposes by using their portable devices, such as smartphones and wearable devices. Commonly, individuals are incentivized to collect data to fulfill a crowdsensing task released by a data requester. This “sensing as a service” elaborates our knowledge of the physical world by opening up a new door of data collection and analysis. However, with the expansion of mobile crowdsensing, privacy issues urgently need to be solved. In this book, we discuss the research background and current research process of privacy protection in mobile crowdsensing. In the first chapter, the background, system model, and threat model of mobile crowdsensing are introduced. The second chapter discusses the current techniques to protect user privacy in mobile crowdsensing. Chapter three introduces the privacy-preserving content-based task allocation scheme. Chapter four further introduces the privacy-preserving location-based task scheme. Chapter five presents the scheme of privacy-preserving truth discovery with truth transparency. Chapter six proposes the scheme of privacy-preserving truth discovery with truth hiding. Chapter seven summarizes this monograph and proposes future research directions. In summary, this book introduces the following techniques in mobile crowdsensing: 1) describe a randomizable matrix-based task-matching method to protect task privacy and enable secure content-based task allocation; 2) describe a multi-clouds randomizable matrix-based task-matching method to protect location privacy and enable secure arbitrary range queries; and 3) describe privacy-preserving truth discovery methods to support efficient and secure truth discovery. These techniques are vital to the rapid development of privacy-preserving in mobile crowdsensing.