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Editorial

Wireless Sensor Network Security

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Wireless sensor networks consist of a large number of low-cost, low-power, and multifunctional sensor nodes that communicate over short distances through wireless links. Such sensor networks are ideal candidates for a wide range of applications such as monitoring of critical infrastructures, data acquisition in hazardous environments, industry control systems, vehicular networks, and military operations. Wireless sensor networks introduce new security challenges due to their dynamic topology, severe resource constraints, and absence of a trusted infrastructure.

The purpose of this special issue is to publish high-quality research papers as well as review articles addressing recent advances of wireless sensor network security.

In this special issue, we will explore the topic of security challenges and solutions for the wide application of wireless sensor networks in different areas, such as RFID and smart grid. RFID has been widely used in logistics and internet of things. Smart grid leverages sensor networks to better balance the load of the power grid. Both of them have great impact on the daily life and are weak points of the whole economy, which attract the attention of terrorists. The feasible attacks and defense solutions are still not clear. The papers in this volume also cover several important foundational security services for wireless sensor networks, such as key management, key distribution, secure cluster formation, secure architecture for multihop communication, intrusion prediction, and secure localization. All these foundational security services are critical bases for application of wireless sensor networks.

We hope that the papers in this volume engender further thinking about new security challenges for wireless sensor networks and even further "out-of-the-box" ideas about how to solve new security problems for wireless sensor networks.

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