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### Advances in Security and Privacy in Sensor Networks

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## Editorial

# Advances in Security and Privacy in Sensor Networks

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Security and privacy are two important research topics in wireless sensor networks. Protocols or applications without security protection cannot be accepted by users. In fact, there are many schemes that were originally thought as secure but were eventually broken, which clearly indicates the need of serious security requirement. There are many tools and primitives that have been used in the protection of secure and privacy-preserving in various real-world applications.

This special issue highlights some of the latest research addressing those challenges. It consists of 11 papers selected from 43 submissions, more specifically, as follows.

- (i) The paper of X.-Z. Liu and G. Yang, titled “*Distributed face recognition using multiple kernel discriminant analysis in wireless sensor networks*,” presents a novel approach called multiple kernel discriminant to detect correct target in wireless sensor networks. The new method provides better efficiency and accuracy compared with the traditional methods.
- (ii) M. Tao et al.’s paper on “*Feature-aware cooperative relaying for multiflow wireless sensor networks*” proposes an algorithm for relaying in a cooperative way with feature detection. It solves the application in multiflow wireless sensor networks.
- (iii) D. Liu’s paper on “*An improved DR algorithm based on target extrapolating in ROIA cloud platform*” presents

a new distributed algorithm in cloud computing by exploring the target features. It is shown that the protocol is more efficient in the enhanced ROIA model. In addition, they present the simulation to analyze its efficiency in real cloud platform.

- (iv) The paper of C.-J. Wang et al., titled “*Two anonymous cooperative cache-based data access schemes in mobile ad hoc networks*,” presents two new anonymous data access control schemes by using cooperative cache techniques, which combines with anonymous primitives to achieve the final security. The scheme is proved to be secure under the proposed security model and is suitable to the environment under privacy requirement.
- (v) The paper of B. Cui et al. “*A novel fuzzing method for Zigbee based on finite state machine*” introduces fuzzy models for the finite state machine. They show that, in the constructions, it is possible to achieve the fuzzy property for the case of Zigbee.
- (vi) Y. Cai et al.’s paper on “*An adaptive particle swarm optimization algorithm for distributed search and collective cleanup in complex environment*” proposes a novel construction for achieving optimization result in complicated environment. The result also achieves the adaptive property.

- (vii) The paper of T. Wang et al., titled “*An energy-efficient and scalable secure data aggregation for wireless sensor networks,*” describes a novel data aggregation algorithm for wireless sensor networks. They illustrate how to prove their security in the proposed security model. The efficiency analysis also demonstrates that their construction is efficient.
- (viii) X. Chen and S. Ouyang’s paper on “*Energy- and spectral-efficiency trade-off in OFDMA-based cooperative cognitive radio networks*” proposes a new construction, which achieves the energy- and spectral-efficiency balance for the OFDMA-based cooperative cognitive radio networks.
- (ix) The paper of N. Javaid et al., titled “*Adaptive medium access control protocol for wireless body area networks,*” discusses an access control by using a novel technique in wireless body area networks.
- (x) The paper of F. Han and J. Qin, titled “*A function private attribute-based encryption,*” presents an improvement on attribute-based encryption. The resulting scheme can achieve a full function privacy in the random oracle model. Such a scheme can be used in the design of secure access control systems.
- (xi) H.-Y. Jeong et al.’s paper on “*An ANP-based practical quality model for a secure embedded system with sensor network*” uses an improved method to achieve secure embedded system in wireless sensor networks.

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