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An efficient and secure recoverable data aggregation scheme for heterogeneous wireless sensor networks

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Highlights (for review)

The advantages of our scheme can be summarized as follows:

- In the proposed scheme, the base station can recover the original sensing data, and thus the aggregation operation will not be restricted by the aggregation functions.
- The proposed scheme can achieve in-network false data filtering to save the energy by not transmitting bogus data. Besides, the aggregators sign on their messages to ensure authorized aggregation and thus the base station can identify the origin and validity of messages received.
- The end-to-end data confidentiality and integrity security services are provided by employing a symmetric homomorphic encryption and a pairing-free signature scheme.
- Comprehensive performance analyses and comparisons are performed in terms of communication overhead, computation overhead, energy consumption and delay. The results show that the proposed scheme has obvious advantages over related works.

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