

## IN-NETWORK CONTINUOUS AGGREGATION OF TEMPORAL VARIABLE DATA IN WSN

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### ABSTRACT

Wireless Sensor Networks (WSNs) is a collection of nodes organized into a cooperative network, Continuous aggregation is usually required in many sensor applications to obtain the temporal variation information of aggregates. However, in a hostile environment, the adversary could fabricate false temporal variation patterns of the aggregates by manipulating a series of aggregation results through compromised nodes. In this paper, we identify distinct design issues for secure continuous aggregation in WSNs. An efficient verification scheme is proposed to protect the authenticity of the temporal variation patterns in the aggregation results. Compared with the existing secure aggregation schemes, our scheme only need to check a small portion of aggregation results in a time window and, thus, greatly reduces the verification cost. We define representative points and propose corresponding algorithms for representative point selection. By exploiting the spatial correlation among the sensor readings in close proximity, a series of security mechanisms are also proposed to protect the sampling procedure.

**INDEX TERMS**— Wireless Sensor Networks, Continuous aggregation, authenticity, temporal variation patterns, in-network, spatial correlation;

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