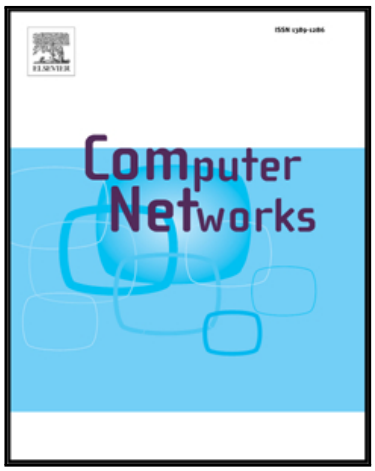


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# Trust-based Secure Clustering in WSN-based Intelligent Transportation Systems

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**Abstract**

Increasing the number of vehicles on roads leads to congestion and safety problems. Wireless Sensor Network (WSN) is a promising technology providing Intelligent Transportation Systems (ITS) to address these problems. Usually, WSN-based applications, including ITS ones, incur high communication overhead to support efficient connectivity and communication activities. In the ITS environment, clustering would help in addressing the high communication overhead problem. In this paper, we introduce a bio-inspired and trust-based cluster head selection approach for WSN adopted in ITS applications. A trust model is designed and used to compute a trust level for each node and the Bat Optimization Algorithm (BOA) is used to select the cluster heads based on three parameters: residual energy, trust value and the number of neighbors. The simulation results showed that our proposed model is energy efficient (i.e., its power consumption is more efficient than many well-known clustering algorithm such as LEACH, SEP, and DEEC under homogeneous and heterogeneous networks). In addition, the results demonstrated that our proposed model achieved longer

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