A Novel Approach to Data Mining in Wireless Sensor Networks

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References:
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Abstract:
Wireless sensor networks (WSN) are networks of small, embedded devices, capable of sensing information from the environment, processing the collected data, and establishing communications among each other and with a remote server site. An important observed problem is embedding a distributed data-mining algorithm into a sensor network. The proposed solution uses local predictors on each sensor node to make a local prediction and offers several original voting schemes. Results for one voting scheme from the open literature, and for several voting schemes introduced by this research are compared using a simulation methodology. Furthermore, a scheme for building local predictors on the data collected from several neighboring nodes is proposed and evaluated. The presented results indicate that the proposed voting schemes and the proposed scheme for local prediction offer an improved accuracy of the WSN-based prediction and a reduction in necessary communications during the prediction process.

Keywords:
distributed data mining, event detection, data interactions, sensor networks, classification, voting schemes