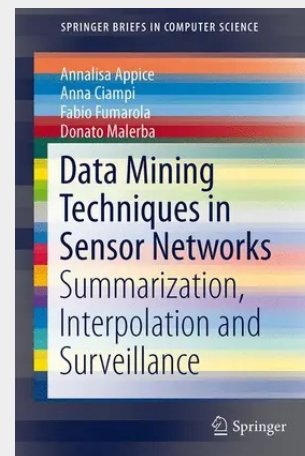


Data Mining Techniques in Sensor Networks

Summarization, Interpolation and Surveillance

Sensor networks comprise of a number of sensors installed across a spatially distributed network, which gather information and periodically feed a central server with the measured data. The server monitors the data, issues possible alarms and computes fast aggregates. As data analysis requests may concern both present and past data, the server is forced to store the entire stream. But the limited storage capacity of a server may reduce the amount of data stored on the disk. One solution is to compute summaries of the data as it arrives, and to use these summaries to interpolate the real data. This work introduces a recently defined spatio-temporal pattern, called trend cluster, to summarize, interpolate and identify anomalies in a sensor network. As an example, the application of trend cluster discovery to monitor the efficiency of photovoltaic power plants is discussed. The work closes with remarks on new possibilities for surveillance enabled by recent developments in sensing technology.

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