

The Effect of Graph Connectivity in Distributed Quickest Change Detection

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- We investigate distributed quickest detection problems in a decentralized sensor network system, which can be represented by an undirected graph with each local sensor accessing the information from the adjacent sensors.

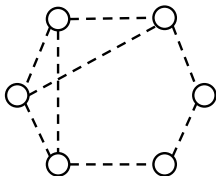


Figure: A general graph structure of sensor network

- In the context of hypothesis testing, one test procedure is “consensus + innovative” algorithm proposed by Sahu and Kar (2016, IEEE Trans. Signal Processing).
- In this paper, we derive the asymptotic properties of this algorithm, and improve the existing results on the effect of network connectivity.
- Moreover, we extend this algorithm and the corresponding results to the quickest change-point detection problem.
- Simulation results demonstrate the usefulness of the quickest change-point detection algorithm.