Genetic Algorithm Based Node Fault Detection and Recovery in Distributed Sensor Networks

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Abstract : In Distributed Sensor Networks, the sensor nodes are prone to failure due to energy depletion and some other reasons. In this regard, fault tolerance of network is essential in distributed sensor environment. Energy efficiency, network or topology control and fault-tolerance are the most important issues in the development of next-generation Distributed Sensor Networks (DSNs). This paper proposes a node fault detection and recovery using Genetic Algorithm (GA) in DSN when some of the sensor nodes are faulty. The main objective of this work is to provide fault tolerance mechanism which is energy efficient and responsive to network using GA, which is used to detect the faulty nodes in the network based on the energy depletion of node and link failure between nodes. The proposed fault detection model is used to detect faults at node level and network level faults (link failure and packet error). Finally, the performance parameters for the proposed scheme are evaluated.