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**Distributed Faulty Node Detection in Delay tolerant Networks: Design and Analysis**

**Abstract:**

Propagation of faulty data is a critical issue. In case of Delay Tolerant Networks (DTN) in particular, the rare meeting events require that nodes are efficient in propagating only correct information. For that purpose, mechanisms to rapidly identify possible faulty nodes should be developed. Distributed faulty node detection has been addressed in the literature in the context of sensor and vehicular networks, but already proposed solutions suffer from long delays in identifying and isolating nodes producing faulty data. This is unsuitable to DTNs where nodes meet only rarely. This paper proposes a fully distributed and easily implementable approach to allow each DTN node to rapidly identify whether its sensors are producing faulty data. The dynamical behavior of the proposed algorithm is approximated by some continuous-time state equations, whose equilibrium is characterized. The presence of misbehaving nodes, trying to perturb the faulty node detection process, is also taken into account. Detection and false alarm rates are estimated by comparing both theoretical and simulation results. Numerical results assess the effectiveness of the proposed solution and can be used to give guidelines for the algorithm design.

**Existing System:**

The problem of distributed faulty node detection (DFD) in DTNs. A node is considered as faulty when one of its sensors frequently reports erroneous measurements. The identification of such faulty nodes is very important to save communication resources and to prevent erroneous measurements polluting estimates provided by the DTN. This identification problem is quite complicated in DTNs when interactions are mainly between pairs of encountering nodes. Most of the classical DFD algorithms are using measurements of spatially-correlated physical quantities collected by many nodes to determine the presence of outliers and identify the nodes producing these outliers. In case of pairwise interactions, mismatch between measurements provided by two different nodes can still be detected, but identifying directly which node produces erroneous measurements is not possible.

**Proposed System:**

The proposed DFD algorithm to some closely related scheme in the literature. As mentioned, classical DFD algorithms are difficult to apply in the context of DTN and no solutions have been presented so far in the literature for this specific scenario. Accordingly, in order to perform a meaningful comparison between our algorithm and a state-of-the-art approach,we have considered the gossip algorithm discussed which represents the most robust and efficient methodology in the context of classification and distributed estimation in dynamic scenarios like DTNs.