Abstract

In this paper, we propose an effective filtering readings detection algorithm to judiciously determine faulty readings without missing interesting events in sensor networks. Explicitly, by exploring spatial correlation and reading behaviors of sensors, we first derive similarity relationships (referred to as trust relation) among sensors. Then, we model the relationships of sensors as a Markov chain and thus develop SensorRank, a mechanism for rating sensors in terms of similarity relationships. In light of SensorRank, we propose a filtering algorithm to effectively detect and filter faulty readings. Performance studies are conducted and simulation results show that our proposed algorithm outperforms others, showing the advantage of SensorRank.

Keywords —Fault tolerance, data accuracy, sensor networks, Byzantine failure.