

**CHENNAI – PONDICHERRY**

**Characterizing Data Deliverability of Greedy Routing in Wireless Sensor Networks**

**Abstract:**

As a popular routing protocol in wireless sensor networks (WSNs), greedy routing has received great attention. The previous works characterize its data deliverability in WSNs by the probability of all nodes successfully sending their data to the base station. Their analysis, however, neither provides the information of the quantitative relation between successful data delivery ratio and transmission power of sensor nodes nor considers the impact of the network congestion or link collision on the data deliverability. To address these problems, in this paper, we characterize the data deliverability of greedy routing by the ratio of successful data transmissions from sensors to the base station. We introduce h-guaranteed delivery which means that the ratio of successful data deliveries is not less than h, and study the relationship between the transmission power of sensors and the probability of achieving h-guaranteed delivery. Furthermore, with considering the effect of network congestion, link collision and holes (e.g., those caused by physical obstacles such as a lake), we provide a more precise and full characterization for the deliverability of greedy routing. Extensive simulation and realworld experimental results show the correctness and tightness of the upper bound of the smallest transmission power for achieving h-guaranteed delivery.

**Existing System:**

.A well-known problem with greedy routing is that it fails at a node called void node that has no neighbor closer to the destination. To handle this problem, many previous works theoretically analyzed the relationship between the transmission radius and the deliverability of greedy routing. Specifically, studied the critical transmission radius (i.e., smallest transmission radius) for greedy routing to ensure that packets can be delivered between any source-destination pairs in randomly deployed wireless ad hoc networks. Further derived higher accurate asymptotic bounds on the critical transmission radius. Studied the relationship between the critical transmission power (i.e., smallest transmission power) and the probability of guaranteed data delivery from all sensors to the central base station (referred to as many-to-one).

**Proposed System:**

We analyze the greedy routing deliverability for many-to-one data delivery in WSNs. Unlike the previous work that considers the deliverability in terms of the probability of guaranteeing all sensors to successfully send their data to the base station, we consider the deliverability in terms of the ratio of delivery-success nodes. In particular, we study the critical transmission power required to ensure that the ratio of delivery-failure nodes does not exceed a threshold with a given probability. We also consider the impact of network congestion and link collision on the deliverability in the study. Compared with the previous work, our results characterize the deliverability in general sense and is much more practical with the additional consideration of the two factors