Efficient Data Gathering in WSN with a Range Constrained Mobile Relay

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ABSTRACT

In Wireless Sensor Networks (WSN), Mobile Relay (MR) is used to collect data from the sensors dispersed in a region. Sensors sense the surrounding environment and record the measurements into their memory. MR has some range constraint which limits the traveling distance of MR in the region where sensors are located. In this paper, we propose a Genetic Algorithm (GA) based method to direct MS such that the amount of the data gathered from sensors are maximized for a given range value. Since the amount of data collected in the memory of each sensor is dynamically increasing this problem brings out different challenges compared to well-known problems such as Travelling Salesman Problem (TSP) and Vehicle Routing Problem (VRP). We have simulated the proposed method and obtained promising results under different simulation and algorithm settings.

Keywords – Wireless Sensor Networks, Mobile Relay, Genetic Algorithm, scheduling