Abstract

The use of WSN has been widespread with it been applied in an enormous number of applications and scenarios. Most existing WSNs use a traditional client/server model in which case there will be a lot of network traffic. To solve this problem mobile agent can be used where data fusion technique is used before sending data to the server. Moreover in most of the data fusion approaches static server are considered. The project proposes the mobile agent based data gathering system in sensor networks where the server is mobile. The objectives of the project are: (1) Studying concepts of mobile agents and previous research related to the project; (2) Exploring data gathering system under a specific situation where a server is movable in sensor networks; (3) Making the system time-efficient as well as energy-efficient; (4) Simulating the network system with appropriate data settings; (5) Experimenting, analyzing results, and evaluating the proposed system. The execution time and the consumed energy are performance metrics of the system by comparing to the traditional client/server model.

A data gathering network system was designed in which mobile agents are used to gather data. These mobile agents get dispatched from a mobile server periodically. After being dispatched the mobile agents move based on some itinerary which is calculated using an algorithm. While moving the MAs collect data and aggregate them. After the itinerary ends, the MAs move to the server which is at the end of the network topology. The server final receives the aggregated result. The system was precisely evaluated with a simulator called NS-2. In simulation experiments we changed the number of sensor nodes and also the movement of the server in order to analyze effects of such parameters on the system. Simulation experiments showed that our mobile agent based data gathering model is both time-efficient and energy-efficient than a traditional client/server based model. Also we used different path for the movement of the server and later found that for a straight line movement the system will be more time-efficient.