

# A Novel Approximation for Multi-Hop Connected Clustering Problem in Wireless Networks

## ABSTRACT

Wireless sensor network (WSN) is a self-organized communication system consisting of many small-sized, cheap, and battery-powered sensors. WSNs have been widely used in a lot of applications such as health-care industry, food industry, disaster management, battlefield surveillance, etc. In these applications, the task of each sensor is to collect the information in its surrounding environment and transmit the corresponding data to the base stations of WSNs.

## EXISTING SYSTEM

In Existing System, Wireless sensor networks (WSNs) have been widely used in a plenty of applications. To achieve higher efficiency for data collection, WSNs are often partitioned into several disjointed clusters, each with a representative cluster head in charge of the data gathering and routing process. Such a partition is balanced and effective, if the distance between each node and its cluster head can be bounded within a constant number of hops, and any two cluster heads are connected. Finding such a cluster partition with minimum number of clusters and connectors between cluster heads is defined as *minimum connected d-hop dominating set (d-MCDS)* problem, which is proved to be NP-complete.

## DIS ADVANTAGES

- Data gathering and transmission problems are occurred.

## PROPOSED SYSTEM

In Proposed System, a distributed approximation named *CS-Cluster* to address the *d*-MCDS problem under *unit disk graph*. *CS-Cluster* constructs a sparser *d*-hop maximal independent set (*d*-MIS), connects the *d*-MIS, and finally checks and removes redundant nodes. We prove the approximation ratio of *CS-Cluster* is  $(2d+1)\lambda$ , where  $\lambda$  is a parameter related with *d* but is no more than 18.4. Compared with the previous best result  $O(d^2)$ , our approximation ratio

is a great improvement. Our evaluation results demonstrate the outstanding performance of our algorithm compared with previous works.

## ADVANTAGES

- Finding an effective partition with minimum number of clusters.
- It improves the performance of CS-Cluster.

## SYSTEM REQUIREMENTS

### H/W System Configuration:-

Processor	- Pentium –III
RAM	- 256 MB (min)
Hard Disk	- 20 GB
Key Board	- Standard Windows Keyboard
Mouse	- Two or Three Button Mouse
Monitor	- SVGA

### S/W System Configuration:-

Operating System	: Windows95/98/2000/XP
Application Server	: Tomcat5.0/6.X
Front End	: HTML, Jsp
Scripts	: JavaScript.
Server side Script	: Java Server Pages.
Database	: MySQL 5.0
Database Connectivity	: JDBC