A K-medoids based clustering algorithm for wireless sensor networks

Abstract

- Wireless sensor networks (WSNs) have become a hot research topic in recent years, due to their wide potential applications such as military surveillance, industrial and agricultural monitoring, smart home with multimedia sensors to collect visual data like image or video.
- Generally, energy consumption is a challenging research issue for WSNs since the tiny sensors cannot be easily recharged after random deployment. In this paper, an efficient energy saving scheme is proposed to reduce energy consumption and to prolong network lifetime.
- One of the popular scenarios to reduce energy consumption for WSNs is clustering technology. The main idea of this method is to reduce the communication distance of sensor nodes by using clustering technique.
- To get the ideal result of cluster, we use K-medoids algorithm to calculate the optimal medoids between sensor nodes.
- Then, we can select the appropriate cluster heads. By balancing network load among the clusters, energy efficiency can be improved and network lifetime can get extended effectively.

Existing system

- Data mining is a vital area of modern research world for processing, analyzing and evaluating large datasets; to identify associations, classifications, and clustering, etc.;
- between different attributes and predict the best results with relevant patterns.
- Significantly, these methods can be used in the field of agriculture and can produce extraordinary significant benefits and predictions that can be used for commercial and scientific purposes. Agricultural research has strengthered the optimized economical profit, internationally and is very vast and important field to gain more benefits.
- However, it can be enhanced by the use of different technological resources, tool, and procedures.

Disadvantage

- The primary objectives of our study are:
- To classify the soil under different agroecological zones in Kasur district, Punjab, Pakistan by different classification algorithm available in data mining.
- To recommend the relevant crops depending on their classification.
- To evaluate the performance of predictive algorithms for better knowledge extraction.

Proposed system

- In this research, the soil samples that are being used were collected from different fields and the surrounding of Kasur district Punjab, Pakistan.
- We have acquired the test center data from Soil Fertility Department, Kasur in the form of unstructured and manual format.
- The data was collected by surveying different locations on different dates and containing the test samples of soil for different properties.
- After the acquisition, the digitization of record has been made to convert data into the structured format for further processing.

Advantage

- Additionally, we have investigated the most
- performing algorithm having powerful prediction
- accuracy to recommend the best erop for better yield.

HARDWARE REQUIREMENTS

- Processor
- Speed
- RAM
- Hard Disk
- Floppy Drive
- Mouse

Monitor

- Pentium -III
- 1.1 Ghz
- 256 MB(min)
 - 20 GB
 - Standard Windows Keyboard
 - Two or Three Button Mouse
- **SVGA**

SOFTWARE REQUIREMENTS

- Operating System
- Front End
- Database

- Java / DOTNET : Mysql/HEIDISOL

Conclusion

- The size of multimedia sensing data is large. So we need compress these data as form of image or video, and we also need provide efficient routing algorithm to reduce energy consumption as much as possible.
- In order to reduce the amount of data transmission and improve the performance of wireless sensor networks, we proposed a Kmedoids based clustering algorithm (KCA) in this paper.
- According to the experimental results and analysis, it can be concluded that our proposed scheme KCA can reduce the energy consumption and can prolong the network lifetime than other three popular algorithms.

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