Abstract

In recent years, wireless sensor networks (WSN) are being used by a wide range of applications. Sensor nodes are used for gathering data about the various physical parameters of the system under study. As sensor nodes are battery powered, energy efficiency is an important challenge faced by WSN. Clustering is a technique for improving the energy efficiency of the sensor network. The reported piece of work uses the soft computing technique, Biogeography-Based Krill Herd Algorithm (BBKH) for energy efficient clustering that results in improving the network lifetime. While cluster heads are selected, the rate adjustment is made for congestion mitigation. Likewise, a threshold based data forwarding method is also employed for further improvement of the network lifetime. Based on threshold principle, sending of similarly sensed data repeatedly is avoided. The network lifetime is compared before and later on using the threshold value. The obtained results after using the threshold concept are 18.80 % better than its threshold free counterpart. The proposed method is used in structural health monitoring (SHM) application where the corrosion risk is monitored in the reinforced concrete structures.
References

1. Handbook on Repairs and Rehabilitation of RCC Buildings, 2002, Director General (Works), Central Public Works Department, Govt of India, Nirman Bhawan.
11. Li, H Li, D, S Song, G, B 2004 Recent applications of fiber optic sensors to health monitoring in civil engineering, Engineering Structures 26, pp 1647–1657.
33. https://failuremechanisms.wordpress.com/2012/12/01/chloride-attack/

Index Terms

Computer Science
Information Sciences

Keywords

Structural Health Monitoring, Congestion, Biogeography-Based Krill Herd algorithm, Genetic Algorithm, Clustering, Corrosion