Abstract

The Structral Health Monitoring System is generally applied to bridges to extend the life of the building by identifying damage to the building earlier. Structural Health Monitoring System based on wireless sensor network on bridges is superior because it is cheaper in terms of costs incurred. However, the resource characteristics of the wireless sensor network are limited. So we need efficiency in energy consumption in wireless sensor networks. One way is to use the optimal routing to transmit data from the sensor node to the sink node. This is meant to minimize energy consumption in wireless sensor networks. Due to the large number of sensor nodes that must be processed and the data processing is done at each sensor node. The ant colony optimization algorithm is one of several optimization algorithms that can be chosen to perform optimal routing. The results of implementing the ACO algorithm were carried out in several test scenarios and compared with the genetic algorithm. The results of the tests obtained show that the ACO and GA algorithms have similar results. And from this research also obtained the performance of the ACO algorithm that has been implemented for WSN on SHMS.

Keywords: routing optimization, wireless sensor network, metaheuristics, ant colony optimization, structural health monitoring system.