ABSTRACT

Wireless Sensor Network (WSN) is a wireless network in which there are one or more sensors to achieve some complex tasks with cooperation between another that scattered sector in the area. WSN can provide the ability in many things eg environmental monitoring, forecast and scientific observation, the object search, control and so on. And the main problem in WSN is energy consumption. Therefore, the energy used must as efficiently as possible so that the lifetime of a network can be better. One solution to manage the problem is using Shortcut Tree Routing algorithm as a routing protocol.

Shortcut Tree Routing Algorithm (STR) is the variance of ZigBee Tree Routing Algorithm (ZTR). STR algorithm allows the transfer of the fast track by using a 1-hop neighbor information as the next-hop. The main reason choosing STR algorithm is to reduce the rest of the next-hop of the algorithm ZTR. By doing so, the energy used are also diminishing see reductions from point to another.

In this final project has been implemented Shortcut Tree Routing algorithms using a wireless sensor network. Where the algorithm is represented using arduino and XBee as wireless communications. From the result of design and analysis, it is known that the ZTR algorithm using energy consumption by an average of 49.93% lower than STR algorithm for delivery at maximum depth one. While the STR algorithm using energy consumption by 53.45% lower than the ZTR algorithm for delivery at maximum depth two.

Keywords: Wireless Sensor Network (WSN), Shortcut Tree Routing Algorithm (STR), ZigBee, Energy Consumption, Hop