

ABSTRACT

With the rapid development, especially in the field of information technology. Needed a technology that serves for monitoring, Controlling and tracking. That can be applied to various fields example for controlling a nuclear reactor, fire detection and traffic monitoring. The technology is a Wireless Sensor Network. Where the Wireless Sensor Network consists of nodes sensors that can monitor physical symptoms or the environment such as temperature, sound, vibration, electromagnetic waves, pressure, movement, and others. In the field of high-risk observation nodes distributed randomly. Result of sensing becomes meaningless if it is not known from where the originating node. So in this case required localization method that consists of distance estimation and computing a position to know the position of nodes. Localization method based on distance estimation can be divided into two categories: one is range free and the other is range based.

This research the writer discusses about Wireless Sensor Network Localization, with focus on performance analysis using DV-Hop and Amorphous algorithm. For computing the position writer using Trilateral algorithm to determine the position of the sensor node. The main reason for using range free method in their application is because range free method requires little energy consumption, low cost, and it is suitable to be applied to a wide area as well as in the field of high-risk observation.

From the results of the simulation with range free localization, on variations anchor node the value of localization error, amorphous algorithm get 13.60% lower than dv-hop algorithm and the value of energy consumption amorphous algorithm get 24.538% lower than dv-hop algorithm. On variations node density the value of localization error, dv-hop algorithm get 26.95% lower than amorphous algorithm but for energy consumption, amorphous algorithm get 14.227% lower than dv-hop algorithm. On variation communication range the value of localization error, dv-hop algorithm get 50.282% lower than amorphous algorithm but for energy consumption, amorphous algorithm get 12.35% lower than dv-hop algorithm.

Keywords : Wireless Sensor Network, Range Free Methods, Amorphous algorithm, DV-hop algorithm, Trilateral algorithm, Error Position, Energy Consumption