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Underwater Mobile Sensor Network Using Directed Diffusion-Fuzzy Logic (DD-FL) Routing Protocol for Object Location Tracking Task

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ABSTRACT

With the integration on sensors and vehicular technology, underwater wireless communication will enable various applications such as underwater environment monitoring, gathering of data and search and rescue mission. These sensor networks comprises of large number of wireless sensor nodes communicating to each other that drives by limited energy source and computing capabilities. Thus, energy efficient communication scheme plays important roles to prolong the network task. Directed Diffusion routing protocol is an energy efficient protocol used in wireless sensor network. But this protocol ignores some important parameters of sensor node in routing process. It ignores the battery level and received signal strength of the node which is very significant in routing data. This paper proposed Directed Diffusion Fuzzy Logic routing protocol object for location tracking task of underwater mobile sensor network. The author used fuzzy logic in the decision making process of the Directed Diffusion routing protocol in order to select the best nodes to be part of the routes. The fuzzy logic will improve the selection of routing metrics by including the node's battery level and receive signal strength in routing process. The simulation using omnett++ network simulator will be done in order to evaluate the efficiency and effectively of Directed Diffusion-Fuzzy Logic over traditional Directed Diffusion routing protocol.

KEYWORDS: Fuzzy logic; sensor network; Directed Diffusion; routing