Artificial Neural Network-based Relay Selection in Underwater Wireless Sensor Network

Publisher: IEEE

Anoop Sreeraj ; Vijayalakshmi. P ; V. Rajendran **All Authors**

Abstract:
As one of the most challenging and promising wireless communications, underwater communication has received much attention. According to the distance, there may be signif... **View more**

Metadata

Abstract:
As one of the most challenging and promising wireless communications, underwater communication has received much attention. According to the distance, there may be significant delay, limited bandwidth and attenuation, which reduce the system's overall performance. To solve these problems, Artificial Neural Network based Relay Selection (ANNRS) in Under Water Wireless Sensor Networks (UWSN) is introduced. This mechanism uses the Artificial Neural Network (ANN) algorithm to choose the relay nodes to pass the data from sender to receiver. The ANN algorithm picked out the relay using four input features: Energy, bandwidth, depth and packet received ratio (PRR). The UWSN may dynamically pick the optimum relay node depending on the current network circumstances by employing an ANN-based relay selection system, which improves network performance, lowers energy consumption, and increases data transmission reliability. The extensive simulation outcomes demonstrate that the ANNRS mechanism enhances the performance, such as PRR, and energy, and minimizes the delay and Assemble Propagation Distance in UWSN.

Published in: 2023 Second International Conference On Smart Technologies For Smart Nation (SmartTechCon)

Date of Conference: 18-19 August 2023

DOI: 10.1109/SmartTechCon57526.2023.10391339

Date Added to IEEE *Xplore*: 19 January 2024

Publisher: IEEE

ISBN Information:

Conference Location: Singapore, Singapore

Contents

Commercial, military, and scientific uses for underwater acoustic wireless communications and networking include tactical observation, offshore exploration, observing of submarine systems, tragedy preparedness, climate change forecasting, control pollution, and tracking. Due to the restricted progress of underwater wireless communications, underwater communication is still accomplished today using communication cables [1]. However, deploying a sensor network is expensive due to the necessity of cables to provide connectivity between sensor nodes on the ocean floor. The scientific community has increased interest in underwater wireless communication because of this. As a result, compared to terrestrial cable or wireless connections, it is seen as a problematic communication medium. Given that advanced transceivers are used to achieve a low transmission rate across a short distance. Figure 1 explains the sample diagram of UWSN.