

## **Adaptive power control aware depth routing in underwater sensor networks**

### **ABSTRACT**

Underwater acoustic sensor network (UASN) refers to a procedure that promotes a broad spectrum of aquatic applications. UASNs can be practically applied in seismic checking, ocean mine identification, resource exploration, pollution checking, and disaster avoidance. UASN confronts many difficulties and issues, such as low bandwidth, node movements, propagation delay, 3D arrangement, energy limitation, and high-cost production and arrangement costs caused by antagonistic underwater situations. Underwater wireless sensor networks (UWSNs) are considered a major issue being encountered in energy management because of the limited battery power of their nodes. Moreover, the harsh underwater environment requires vendors to design and deploy energy-hungry devices to fulfil the communication requirements and maintain an acceptable quality of service. Moreover, increased transmission power levels result in higher channel interference, thereby increasing packet loss. Considering the facts mentioned above, this research presents a controlled transmission power-based sparsity-aware energy-efficient clustering in UWSNs. The contributions of this technique is threefold. First, it uses the adaptive power control mechanism to utilize the sensor nodes' battery and reduce channel interference effectively. Second, thresholds are defined to ensure successful communication. Third, clustering can be implemented in dense areas to decrease the repetitive transmission that ultimately affects the energy consumption of nodes and interference significantly. Additionally, mobile sinks are deployed to gather information locally to achieve the previously mentioned benefits. The suggested protocol is meticulously examined through extensive simulations and is validated through comparison with other advanced UWSN strategies. Findings show that the suggested protocol outperforms other procedures in terms of network lifetime and packet delivery ratio.