ICES 2024

TITLE OF PROJECT: Real-Time Data Transmission from Underwater Network to Base Station using AUV and UAV relays.

NAME OF ALL AUTHORS: Shashank

NAME OF YOUR MENTOR: Asst Prof Anoop C

NAME OF YOUR COLLEGE: INS Vishwakarma/ Indian Navy

ABSTRACT (150-300 words):
With the advancement of technology, there had been a quantum leap in Internet-of-Things which had been divided further into other specific branches. One of them is Internet-of-Underwater-Things which emphasizes establishing a worldwide network of smart interconnected underwater objects that helps the human race to monitor vast unexplored water areas. There is a very important concern regarding data transmission from the underwater world to the base point. AUVs have been used for oceanographic surveys but they cannot determine their absolute position with the help of the global navigation satellite system (GNSS) because of the strong attenuation of radio waves in water. The employment of base stations i.e. surface ships is also not possible because of low speed and maneuvering and high labor. Also keeping in mind, the IoUT, we need to establish an underwater sensor network (UWSN) in order to gather data using underwater sensor nodes (SN). This paper investigates the architecture of establishing 4D UWSN which includes underwater mobile sensor networks. These mobile underwater AUVs collect data from anchor nodes and then transmit it to the remote station. This paper takes UAV relays into account for enabling end-to-end communication between sensor nodes and mothership. The mode of data transmission between the sensor node and AUV is taken as UWOC. The further mode of transmission from AUV to UAV is taken to be free space optic while from UAV to the base station is taken to be RF. This paper also tries to create an algorithm for the tracking procedure of AUV and UAV to set up a reliable and stable network.

KEYWORDS: Internet of Underwater Thing, Autonomous Underwater Vehicle, Unmanned Aerial Vehicle, Under Water Sensor Nodes, Under Water Optical Communication, Free Space Optics

CATEGORY: Remote Sensing