

Synopsis Seminar

Seminar Title	: Efficient 3D-Localization Algorithm in Underwater Acoustic Sensor Network Employing Optimization Method
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Supervisor	: Prof. Pabitra Mohan Khilar
Venue	: Convention Hall
Date and Time	: 25 Oct 2024 (4.00 PM)
Abstract	: The Underwater Acoustic Sensor Network (UASN) is a specialized type of wireless sensor network designed for underwater environments. The underwater acoustic sensor network is a fundamental source for ocean exploration. The potential applications of UASN include seismic imaging, disaster prevention, mine reconnaissance, pollution monitoring, exploration of natural resources, military surveillance, etc. To acquire accurate results, implementing all applications of underwater sensor networks requires adequate network connection and communication technology. The precise placement of underwater sensor nodes must be identified to communicate effectively. The sensor nodes in UASN are intermittently deployed randomly in the three-dimensional scenario. Determining the three-dimensional localization of underwater sensor nodes is one of the most challenging tasks as compared to two dimensional. This motivates us to propose a three-dimensional localization algorithm in USAN. In this thesis, we proposed three range-free localization algorithms. The proposed algorithms I-LASP, RLCS-IUGWOM, LAS-IUSSOT, are based on the compensation of the stratification effect for the improvement of the performance parameters such as localization accuracy, ranging accuracy, convergence rate, and execution time. Then proposed the fourth algorithm EELBL-BR for clustering of localized sensor nodes. The simulation, experimental validation, and analysis are performed employing a Python environment to evaluate the performance of the proposed schemes.