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Dr. Mo is borne in December 1974, has held a doctoral degree and works now as an associate professor in the vocatinal college. Dr. Mo is the academic leader of the UAV Application Technology and Low-altitude Technology and Engineering, specializing in research and practical applications of UAV system technology and UAV countermeasures.

Speech Title (English):

Recognition Algorithm of UAV Swarm based Distributed Acoustic Sensors Network

Speech Abstract

Distributed acoustic sensor networks (DASN) are recognized as a critical component for detecting and identifying low-altitude drone swarms in multi-source integrated air defense systems, effectively addressing detection blind spots in air surveillance where radar and optical networks fall short. After introducing the basic architecture and algorithm flow, the TDOA position estimation phase following the linearization of the hyperbolic equation system is implemented using the least-squares method, where the signal arrival time difference is utilized to determine the target position. An adaptive threshold adjustment mechanism based on Bayesian estimation theory is proposed. This mechanism dynamically adjusts thresholds according to prior information and observed data to enhance recognition accuracy in environments with strong background noise. This mechanism integrates the DBSCAN clustering algorithm with heading constraints to optimize the recognition process of low-altitude UAV swarms. The DBSCAN algorithm effectively processes clusters of arbitrary shapes and identifies noise points. Through this integration, the threshold is dynamically adjusted to adapt to varying environmental conditions, thereby enhancing the algorithm's operational stability in background of large noise and improving the robustness of recognition for specific kind of low-altitude UAV swarm.