

國立中山大學應用數學系

學術演講

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講題：UAV vs. Bird: Complex Signal Classification

時間：2026/ 3/ 5 (Thursday) 14:10 ~ 15:00

地點：理 SC4009-1 教室

茶會：13:30 於理 SC4010 室 (系辦公室)

Abstract

A radar-based framework is investigated that allows for reliable discrimination between unmanned aerial vehicles (UAVs) and birds under low-visibility conditions. Using complex-valued mmWave MIMO radar data, targets are localized via phase-coherence based region-of-interest selection and decomposed by complex empirical mode decomposition (CEMD). Physically interpretable micro-Doppler features—instantaneous frequency, bandwidth, energy, and spectral entropy of intrinsic mode functions—are extracted and embedded in a supervised classification pipeline combining PCA principal component analysis and SVMs support vector machines. Experiments on controlled anechoic-chamber measurements of drones and a bionic bird demonstrate stable classification accuracies around 95% and robustness under additive noise, highlighting the suitability of the approach for counter-UAS applications.

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