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BIRD CLASSIFICATION IN NOISY ENVIRONMENTS: THEORY, RESULTS AND COMPARATIVE STUDIES

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(P11) BIRD CLASSIFICATION IN NOISY ENVIRONMENTS: THEORY, RESULTS AND COMPARATIVE STUDIES

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Bird classification plays an important role in minimizing collisions between birds and aircraft. It is a challenging task to perform the sound-based classification correctly in a noisy environment. This paper addresses robust techniques that can improve the classification of bird in noisy environments. A complete recognition system is described and evaluated on a bird sound database containing 1547 bird sound files, with 11 bird species. Two types of features were extracted from the sound files: Mel Frequency Cepstral Coefficient (Mfcc) and RelAtive SpecTrAl (RASTA). Also, two statistical classifiers were developed using Gaussian Mixture Models (GMM) and Hidden Markov Models (HMM), respectively. The performance of these features and models are compared. Very good recognition rates (97% for clean data and 92% for 5dB signal-to-noise ratios) have been achieved when proper feature and model were selected.