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# **Domain Adaptation for Automatic Bird Sound Classification: Compensating for Domain Shift Due to Location Mismatch**

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Acoustic monitoring is a noninvasive approach to collecting bioacoustic data for studying the activity and behavior of animal species in their natural habitats. However, diverse acoustic conditions across recording locations introduce a significant challenge for deep learning-based audio processing, known as domain shift. In this paper, we compare several data-driven domain adaptation techniques to mitigate domain shift in automatic bird classification. Specifically, we investigate the Z-score normalization, relaxed instance frequency-wise normalization (RFN), feature projection-based domain adaptation (FPDA), and instance-wise feature projection-based domain adaptation (IFPDA) in combination with different data partitioning strategies. Using two bioacoustic datasets recorded at different locations, our results demonstrate that domain adaptation techniques, particularly those incorporating frequency-band-based data normalization, effectively reduce domain shift and improve classification performance.

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