

Title: Image Based Bangladeshi Bird Detection and Classification through Deep Learning

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Abstract: Birds, as a diverse and integral component of the natural world, play a pivotal role in maintaining the balance and health of ecosystems. Their presence influences not only the environment but also various aspects of human life, making the accurate identification and understanding of birds crucial. Bird detection and classification from images is a challenging task with diverse applications, ranging from wildlife conservation and ecological studies to urban planning and agriculture. This research paper aims to explore the use of deep learning techniques for accurately detecting and classifying birds in images, as identifying native birds is vital for maintaining ecological balance, advancing scientific knowledge, preserving cultural heritage, and enhancing recreational activities. Deep learning is used in many fields [1], like speech, image recognition, drug discovery and toxicology, customer management, recommendation systems, bioinformatics, NLP, etc. This paper delves into various state-of-the-art deep learning architectures, including EfficientNetB7, MobileNetV3, and ResNet101. The research involves the preparation of a comprehensive dataset of bird images and evaluates the performance of different models based on various metrics, such as precision, recall, and F1-score. By enhancing the capacity to identify and comprehend birds, one strengthens the ability to protect and conserve the intricate web of life on our planet. Furthermore, challenges encountered during the process were discussed, and potential avenues for future research to enhance bird detection capabilities in real-world scenarios were proposed.

Keywords: Deep Learning, Bird Detection, F1 Score, Deep Learning Techniques, Image Recognition, Customer Relationship Management

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