

Smart Agriculture: Deep Learning Approach for Bird Detection on Crops in the Field

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Abstract: Bird invasions in agricultural regions result in significant crop damage, thereby diminishing food output and impacting farmers' income. Traditional deterrence techniques, such as scarecrows and auditory devices, sometimes prove ineffective owing to their restricted flexibility and absence of automation. Progress in deep learning and computer vision has facilitated the creation of sophisticated bird detection systems that can monitor and identify avian behaviors in real time. This article examines contemporary deep learning methodologies employed for avian identification and their significance in current smart agricultural practices. It emphasizes the accessible datasets, prevalent detection algorithms (including YOLO and Faster R-CNN), assessment measures, and IoT-based hardware integration for practical applications. Finally, the report examines existing problems and proposes future research avenues for developing dependable and cost-effective automated avian monitoring systems.

Keywords: Visual Impairment, Raspberry Pi, CNN Algorithm, Computer Vision, Object Recognition

