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Optimizing Livestock Productivity with Computer Vision-Based Cow Estrus Detection in Free Stall Barns using Various YOLOv8 Models
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Abstract
In the domain of livestock management, the precise detection of estrus in cows is crucial for reproductive efficiency and enhanced livestock production. Traditional methods, primarily based on human observation, are labor-intensive and can be error-prone. This study leverages YOLOv8, a cutting-edge computer vision technology, for cow estrus detection. Our evaluation reveals that YOLOv8 achieved a remarkable accuracy rate, outperforming conventional methods in speed and reliability. Specifically, the model demonstrated a precision of 96%, a recall of 96.1%, and a mean average precision (mAP) of 98.35% for the 50% intersection over union (IoU) threshold. By integrating YOLOv8, we highlight the potential for substantial improvements in reproductive efficiency, labor cost savings, and increased profitability in the cattle sector. This work emphasizes the transformative impact of advanced technology in agriculture and paves the way for future innovations in livestock management. © 2023 IEEE.

Author Keywords
computer vision; cow estrus detection; deep learning; Livestock management; YOLOv8

Index Keywords
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