

Application of YOLOv12 model combined with Multi-Stage Attention mechanism in biological stress detection on tea leaves

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Abstract: In the context of agriculture increasingly requiring the application of advanced technologies to enhance management and production efficiency, this topic focuses on developing an automated system based on the YOLOv12 model combined with a Multi-Stage Attention mechanism to detect biological stress on tea leaves. The objective of the research is to build an effective solution to help farmers and scientists quickly assess the health status of tea plants, thereby making timely decisions during cultivation. The research method combines both theory and experimentation to demonstrate the applicability of this new model in detecting biological stress on tea leaves. The expected results will contribute significantly to improving the quality and productivity of tea production, while also opening new research directions for the field of vision-based monitoring in agriculture.

Keywords: YOLOv12, Multi-Stage Attention, Biological Stress, Automatic Detection, Tea Leaves