Vision Model Performance Meta-Analysis for Fruit Harvesting (56 Studies) (a) Algorithm Family Performance Distribution (b) Recent Model Achievements Timeline R-CNN Family 94 YOLO Series 92 92 18 studies 12 studies 90 Average Accuracy (%) 8 studies Peak Accuracy (%) 12 studies 6 studies 84 84 82 82 80 80 Hybrid Methods R-CNN YOLO CNN Classifiers 2016 2017 2019 2020 2021 2022 Traditional 2018 2023 2024 Family Series Methods Year (c) Real-time Processing Capability Analysis (d) Environmental Robustness Comparison 95.0 Target Accuracy R-CNN Family Real-time Threshold YOLO Series **Y**9626%4 YOLOv8 Faster R-CNN 92.5 YOLOv5 YOLO Custom ask R-CNN 90.0 Average Accuracy (%) 87.5 0.58 0.5 5.5 Accuracy (%)
08
08 80.0 75 77.5 75.0 70 + 40 50 60 70 80 90 100 110 120 Orchard Field Laboratory Greenhouse (Controlled) (Semi-structured) (Natural) (Unstructured) Processing Time (ms)

Environment Type