*FruitVision: A benchmark for fresh, rotten, and formalin-mixed fruit detection*

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**Related Work Table**

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| **Ref. No** | **Year** | **Method** | **Dataset** | **Categories** | **Model** | **Advantages** | **Limitations** |
| [1] | 2025 | Supervised Learning | Data in Brief | 8 | ResNet50,  Gaussian filter | High accuracies beyond 99% ensure robustness and prevent overfitting | Lack of external validation, in a real-world application, the models would need to be paired with additional sensors and systems that enable a 360-degree view of each fruit. |
| [2] | 2024 | Supervised learning | Custom-built by authors | 4 | DurbeenNet | 96.71 % accuracy in detecting potentially chemically contaminated fruits | Cannot specify the particular harmful elements mixed with the fruits |
| [3] | 2022 | Self  supervised | Riseholme‑2021:3,520 RGB strawberry images from a mobile robot | 2 | Custom 2D CNN encoder (ResNet) | • Learns color-specific features • Early stopping via proxy task accuracy • Lightweight, real-time on robots | • Only captures color anomalies • Limited to strawberries and RGB data • May miss structural anomalies |
| [4] | 2025 | Self  supervised | Hyperspectral datasets of strawberry & blueberry | 4 | 2D CNN classifier | • Exploits rich spectral + spatial data • High detection performance 92% accuracy. | • Requires expensive hyperspectral sensors • PCA may discard nuances • Tested only on two fruit types |
| [5] | 2025 | Supervised Learning | Fruit Freshness Classification and Detection | 3 | ResNet-101 | Robust Detection &  Improve accuracy | Increased computational overhead |
| [6] | 2023 | Self  supervised | A Self‑Supervised Anomaly Detector of Fruits Based on Hyperspectral Imaging | 6 | Hyperspectral imaging or  CNN based | 92% high accuracy, detects subtle defects | Requires hyperspectral imaging, not multiclass |
| [7] | 2023 | Supervised Learning | Public dataset from Kaggle: **12,000 images**, 10 fruits + 5 vegetables | 20 | SVM, LDA, Bagging | 1. **High accuracy** (96.98% overall with SVM + all 3 CNNs + PCA).  2. **Efficient feature extraction** using pre-trained networks, no need for extensive training. | 1. **Variable performance**: poor detection on "rotten bell pepper" and "rotten potato" (accuracy under 90%).  2. Relies on good-quality pre-trained CNN features |
| [8] | 2018 | Supervised Learning | 1,200 controlled images of 7 produce types | 3 | Gray-Level Cooccurrence Matrix,  SVM, KNN | Interpretable, small dataset, multi-class, 92–94% accuracy | Hand-crafted features limit generalization; controlled conditions only; modest dataset size |
| [9] | 2022 | supervised | Custom: 6 fruits | 6 | YOLOv3 | Detection and grading | Private dataset, per-fruit models, limited fruit scope. |

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