



EAST WEST UNIVERSITY

Course Title: Artificial Intelligence

Course Code: CSE366

Section: 1

Related Work

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Ref	Title	Detaset	Method	Results	Pros	Cons	Future work
1	Fresh and Rotten Fruits Classification Using Deep CNN(2020)	Self-collected fruit image dataset (fresh, rotten, mixed for 6 fruits)	Custom CNN with 4 convolutional layers, ReLU activation, and max pooling	96.8%	Simple and easy-to-train model	Limited to 6 fruit types and struggles with scalability	Expand to more fruit types and test on larger and diverse datasets
2	Deep Learning-Based Method for Classification and Ripeness Assessment of Fruits and Vegetables (2023)	32 fruits/vegetables with 6 ripeness levels (self-collected)	Dual-stage CNN pipeline using MobileNetV2	97.9%	Two-level classification and applicable to mixed datasets	Needs multiple models	Test on more complex datasets
3	Fruit Freshness Classification and Detection Based on ResNet (2025)	Multi-fruit dataset (good vs bad classification), 10k images	ResNet backbone with fine-tuning for binary classification	98%	Strong performance on binary freshness detection	Limited to binary freshness	Expand to multi-condition classification
4	SmartRipen: LSTM-GRU Feature Selection & XGBoost-CNN for Fruit Ripeness Detection (2025)	Self-collected mango dataset + time-series harvesting metadata	Combines LSTM-GRU for time-series feature selection + CNN with XGBoost classifier	High accuracy (unspecified)	Combines image and time-series data	not purely CNN-based	Expand to other fruits
5	Multi-Class Fruit Quality Detection Using EfficientNet (2024)	4 classes (good, bad, rotten, overripe) from 3 fruit types (~12k images)	EfficientNet-B0 with data augmentation, label smoothing	98.6%	EfficientNet lightweight yet powerful	Limited fruit variety	Incorporate multi-spectral inputs
6	Palm Fruit Ripeness Classification (2025)	8,000 palm fruit images	Transfer learning with ResNet50 & InceptionV3	>85%	Shows feasibility on non-standa	Lower accuracy	Increase dataset diversity optimize architectures

					rd fruit ripeness		
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7	Classifying Healthy & Defective Fruits with Multi-Input CNN(2024)	Apples & mangoes (RGB + silhouette images)	Multi-input CNN using MobileNetV2 & VGG16	100%	Innovative silhouette + RGB fuse; very high accuracy	Uses silhouette input requires segmentation	Extend to more fruits
8	Automatic Fruits Freshness Classification(2023)	3 public fruit datasets (apples, bananas, oranges)	Transfer learning with AlexNet; color preprocessing, augmentation	98.2%	computationally efficient	Focus on binary freshness only	Add more fruit types and states
9	Facilitated Machine Learning for Fruit Quality (2023)	Apple defect & banana ripeness datasets (small)	Pre-trained Vision Transformers (ViT) without retraining	90% (close to best CNN)	Few-shot, less data required	Slightly lower than CNN peak	Expand to more fruits and tasks
10	Fruit Quality Assessment with DenseNet(2022)	19,526 images of 6 fruits × 3 quality grades	DenseNet (transfer learning) fine-tuned for quality classification	99.67 %	robust on multi-grades	DenseNet heavy	Try lightweight models for mobile