



MENU

Results for ARTIFICIAL INTE... >

Artificial intelligence and machine learning in postharvest fruit quality asse...

[Full text at publisher](#)

Export ▾

Add To Marked List ▾

< 1 of 1 >

Artificial intelligence and machine learning in postharvest fruit quality assessment: Current challenges, recent advances, and future prospects

By [Gidado, MJ](#) (Gidado, M. J.) ^[1]; [Gunny, AAN](#) (Gunny, Ahmad Anas Nagoor) ^[1], ^[2]; [Gopinath, SCB](#) (Gopinath, Subash C. B.) ^[1], ^[3], ^[4]; [Devi, M](#) (Devi, Monisha) ^[1]; [Ibrahim, AM](#) (Ibrahim, Azhar Mohd) ^[5]

[View Web of Science ResearcherID and ORCID](#) (provided by Clarivate)

Source [JOURNAL OF STORED PRODUCTS RESEARCH](#)

[← View Journal Impact](#)

Volume: 116

DOI: 10.1016/j.jspr.2026.102959

Article Number 102959

Published MAR 2026

Indexed 2026-02-06

Document Type Article

Abstract The postharvest phase is critical to maintaining the quality, safety, and marketability of horticultural produce. Artificial Intelligence (AI) and Machine Learning (ML) have emerged as transformative tools in this domain, offering rapid, non-destructive, and highly accurate methods for assessing fruit quality. This review provides a comprehensive and critical analysis of the current state of AI and ML applications in postharvest quality assessment, with an emphasis on recent advancements in deep learning, computer vision, and predictive modelling. Despite significant progress, notable challenges persist including limited model generalizability across fruit types and environments, the high cost of implementation, data scarcity, and a lack of standardized protocols. These issues are particularly acute for smallholder farmers and low-resource settings. This review identifies critical research gaps such as the need for scalable, interpretable, and low-cost AI solutions, robust models capable of operating under dynamic environmental conditions, and interdisciplinary collaboration for practical deployment. It highlights novel approaches, including lightweight AI for edge computing, multi-modal sensor integration, and the use of open-source platforms to enhance accessibility. By synthesizing existing knowledge and mapping out future research directions, this review offers a roadmap for the development of inclusive, efficient, and sustainable AI-driven postharvest systems.

Keywords **Author Keywords:** [Artificial intelligence](#); [Machine learning](#); [Postharvest technology](#); [Deep learning](#); [Fruit quality](#)
Keywords Plus: [VISION](#); [CLASSIFICATION](#); [INTERNET](#); [SYSTEM](#); [MODEL](#)

Author Information Corresponding Address: Gunny, Ahmad Anas (corresponding author)
Nagoor

▼ Univ Malaysia Perlis, Fac Chem Engn & Technol, Kompleks Pusat Pengajian Jejawi 3, Kawasan Perind J, Arau 02600, Perlis, Malaysia

Corresponding Address: Gunny, Ahmad Anas (corresponding author)
Nagoor

▼ Univ Malaysia Perlis, Ctr Excellence Biomass Utilisat, Kompleks Pusat Pengajian Jejawi 3, Kawasan Perind J, Arau 02600, Perlis, Malaysia

E-mail Addresses :

ahmadanas@unimap.edu.my

Addresses :

▼ ¹ Univ Malaysia Perlis, Fac Chem Engn & Technol, Kompleks Pusat Pengajian Jejawi 3, Kawasan Perind J, Arau 02600, Perlis, Malaysia

▼ ² Univ Malaysia Perlis, Ctr Excellence Biomass Utilisat, Kompleks Pusat Pengajian Jejawi 3, Kawasan Perind J, Arau 02600, Perlis, Malaysia

▼ ³ Saveetha Inst Med & Tech Sci SIMATS, Saveetha Med Coll & Hosp, Ctr Global Hlth Res, Chennai 602105, Tamil Nadu, India

▼ ⁴ Univ Malaysia Perlis, Inst Nano Elect Engn, Arau 02600, Perlis, Malaysia

▼ ⁵ Int Islamic Univ Malaysia, Dept Mechatron Engn, Adv Multiagent Syst Lab, Kuala Lumpur, Malaysia

E-mail Addresses :

gidadomjay@gmail.com; ahmadanas@unimap.edu.my; subash@unimap.edu.my; monisha97md@gmail.com; azhar_ibrahim@iium.edu.my

Data availability statement

No datasets were generated or analyzed during the current study.

Categories/ Classification

Research Areas: Entomology

Web of Science Categories

[Entomology](#)

+ See more data fields

Journal information

[← View Journal Impact](#)

Journal
Citation
Indicator™
(2024)

ISSN 0022-474X

eISSN 1879-1212

Current Publisher PERGAMON-ELSEVIER SCIENCE LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB, ENGLAND

Table of Contents [Current Contents Connect](#)

Research Areas Entomology

Web of Science Categories Entomology

Citation Network

In Web of Science Core Collection

0 Citations

[🔔 Create citation alert](#)

182

Cited References

[→ View Related Records](#)

How does this document's citation performance compare to peers?

Use in Web of Science

0

Last 180 Days

0

Since 2013

[Learn more →](#)

This record is from:

Web of Science Core Collection

- Science Citation Index Expanded (SCI-EXPANDED)