

DAFTAR PUSTAKA

- [1] Badan Pusat Statistik, “Produksi tanaman buah-buahan dan sayuran tahunan menurut jenis tanaman tahun 2024,” 2025, diakses Juni 2026. [Online]. Available: <https://www.bps.go.id>
- [2] L. Kapoor *et al.*, “Fruit ripening: Dynamics and integrated analysis of carotenoids and anthocyanins,” *BMC Plant Biology*, 2022. [Online]. Available: <https://link.springer.com/article/10.1186/s12870-021-03411-w>
- [3] H. Muthmainnah, R. Poerwanto, and D. Efendi, “Perubahan warna kulit buah tiga varietas jeruk keprok selama penyimpanan,” *Jurnal Hortikultura Indonesia*, vol. 5, no. 1, pp. 10–20, 2014.
- [4] R. Anggraini *et al.*, “Studi degreening pada jeruk kultivar keprok madu terigas,” *Jurnal Pascapanen*, 2015.
- [5] M. Rizzo, M. Marcuzzo, A. Zangari, A. Gasparetto, and A. Albarelli, “Fruit ripeness classification: A survey,” *Artificial Intelligence in Agriculture*, vol. 7, pp. 44–57, 2023. [Online]. Available: <https://scholar.google.com/scholar?q=Fruit+Ripeness+Classification+A+Survey>
- [6] ams AG, *TCS3472 Color Light-to-Digital Converter with IR Filter*, ams AG, 2018, datasheet.
- [7] E. H. Mamdani and S. Assilian, “An experiment in linguistic synthesis with a fuzzy logic controller,” *International Journal of Man-Machine Studies*, vol. 7, no. 1, pp. 1–13, 1975.
- [8] M. A. Mansour, K. D. Dambul, and K. Y. Choo, “A review of non-destructive ripeness classification techniques for oil palm fresh fruit bunches,” *Journal of Oil Palm Research*, vol. 35, no. 4, pp. 543–554, 2023. [Online]. Available: <https://scholar.google.com/scholar?q=A+Review+of+Non-Destructive+Ripeness+Classification+Techniques+for+Oil+Palm+Fresh+Fruit+Bunches>
- [9] A. Khumaidi *et al.*, “Using fuzzy logic to increase accuracy in mango maturity index classification approach for developing a portable near-infrared spectroscopy device,” *Sensors*, vol. 22, no. 24, p. 9704, 2022. [Online]. Available: <https://scholar.google.com/scholar?q=Using+Fuzzy+Logic+to+>

Increase+Accuracy+in+Mango+Maturity+Index+Classification+Approach+
for+Developing+a+Portable+Near-Infrared+Spectroscopy+Device

- [10] R. N. Fitasari and D. Irawan, "Prototype of tomato fruit sorting based on color based on esp32-cam with fuzzy logic method," *Jurnal Teknik Elektro dan Komputer TRIAC*, vol. 12, no. 1, pp. 21–26, 2025. [Online]. Available: <https://journal.trunojoyo.ac.id/triac/article/view/29981>
- [11] M. A. Azmi *et al.*, "Segregation of oil palm fruit ripeness using color sensor," *Journal of Agricultural Engineering*, 2022. [Online]. Available: <https://scholar.google.com/scholar?q=Segregation+of+Oil+Palm+Fruit+Ripeness+Using+Color+Sensor>
- [12] H. Q. Hakim, "Klasifikasi buah mangga menggunakan sensor penciuman elektronik dan sensor warna dengan metode fuzzy logic," 2024, skripsi, Universitas Hasanuddin. [Online]. Available: <https://scholar.google.com/scholar?q=Klasifikasi+Buah+Mangga+Menggunakan+Sensor+Penciuman+Elektronik+dan+Sensor+Warna+dengan+Metode+Fuzzy+Logic>
- [13] I. Prabasari *et al.*, "Analysis of cross validation on classification of mangosteen fruit ripeness using support vector machine," *Engineering and Information Systems Technology*, 2024. [Online]. Available: <https://scholar.google.com/scholar?q=Analysis+of+Cross+Validation+on+Classification+of+Mangosteen+Fruit+Ripeness+Using+Support+Vector+Machine>
- [14] A. R. Sembiring *et al.*, "Design of a siam orange ripeness detection application using digital image processing," *Journal of Artificial Intelligence and Engineering Applications*, 2025. [Online]. Available: <https://scholar.google.com/scholar?q=Design+of+a+Siam+Orange+Ripeness+Detection+Application+Using+Digital+Image+Processing>
- [15] Y. I. Sulistya *et al.*, "Classification of noni fruit ripeness using support vector machine," *International Journal of Data Science*, 2024. [Online]. Available: <https://scholar.google.com/scholar?q=Classification+of+Noni+Fruit+Ripeness+Using+Support+Vector+Machine>
- [16] R. Singh *et al.*, "Deep learning-based approach for classifying mandarin orange maturity stages," *Food and Function*, 2025. [Online].

Available: <https://scholar.google.com/scholar?q=Deep+Learning-Based+Approach+for+Classifying+Mandarin+Orange+Maturity+Stages>

- [17] M. L. Mekhalfi, P. Chippendale, F. Fraile, and M. Rico, “Orange quality grading with deep learning,” *arXiv preprint*, 2025. [Online]. Available: <https://scholar.google.com/scholar?q=Orange+Quality+Grading+with+Deep+Learning>
- [18] N. Y. D. Rahmawati *et al.*, “Chili ripeness level detection with yolov8 and fuzzy mamdani logic,” *Jurnal Teknologi Pertanian*, 2025. [Online]. Available: <https://scholar.google.com/scholar?q=Chili+Ripeness+Level+Detection+with+YOLOv8+and+Fuzzy+Mamdani+Logic>
- [19] A. Kamsyakawuni, A. Riski, and A. B. Khumairoh, “Application fuzzy mamdani to determine the ripeness level of crystal guava fruit,” *BAREKENG: Jurnal Ilmu Matematika dan Terapan*, vol. 16, no. 3, pp. 1087–1096, 2022. [Online]. Available: <https://scholar.google.com/scholar?q=Application+Fuzzy+Mamdani+to+Determine+the+Ripeness+Level+of+Crystal+Guava+Fruit>
- [20] E. R. Arboleda, C. L. T. de Jesus, and L. M. S. Tia, “Pineapple maturity classifier using image processing and fuzzy logic,” *IAES International Journal of Artificial Intelligence*, vol. 10, no. 4, pp. 830–838, 2021. [Online]. Available: <https://scholar.google.com/scholar?q=Pineapple+Maturity+Classifier+Using+Image+Processing+and+Fuzzy+Logic>
- [21] D. F. Al Riza *et al.*, “Mandarin orange ripeness level prediction using combination reflectance-fluorescence spectroscopy,” *Postharvest Biology and Technology*, 2023. [Online]. Available: <https://scholar.google.com/scholar?q=Mandarin+Orange+Ripeness+Level+Prediction+Using+Combination+Reflectance-Fluorescence+Spectroscopy>
- [22] F. Habibi *et al.*, “Citrus fruit pigments,” University of Florida IFAS Extension, 2023. [Online]. Available: <https://ask.ifas.ufl.edu/publication/HS1472>
- [23] M. Saputra *et al.*, “Color detection system using tcs34725 sensor and esp32 microcontroller,” *International Journal of Advanced Technology*, vol. 9, no. 1, pp. 11–18, 2024.
- [24]

- [25] S. Pawar *et al.*, “Ripeness detector for vegetables and fruits,” in *2022 2nd International Conference on Intelligent Technologies (CONIT)*, 2022, pp. 1–5.
- [26] A. Lazaro *et al.*, “Color measurement and analysis of fruit with a battery-portable sensor system,” *Sensors*, vol. 19, no. 15, p. 3391, 2019.
- [27] B. Khaleghi, A. Khamis, F. O. Karray, and S. N. Razavi, “Multisensor data fusion: A review of the state-of-the-art,” *Information Fusion*, vol. 14, no. 1, pp. 28–44, 2013.
- [28] A. Tsanousa *et al.*, “A review of multisensor data fusion solutions in smart manufacturing systems,” *Sensors*, vol. 22, no. 5, p. 1835, 2022.
- [29] L. A. Zadeh, “Fuzzy sets,” *Information and Control*, vol. 8, no. 3, pp. 338–353, 1965.
- [30] J. Han, M. Kamber, and J. Pei, *Data Mining: Concepts and Techniques*, 3rd ed. Morgan Kaufmann, 2012.
- [31] DigiKey Electronics, “Esp32-devkitc-32d: Esp-wroom-32 - 802.11 b/g/n (wifi/wlan/wi-fi 4), bluetooth smart ready 4.x dual mode (ble) transceiver 2.4ghz evaluation board,” <https://www.digikey.ph/en/products/detail/espressif-systems/ESP32-DEVKITC-32D/9356990>, 2024.
- [32] Espressif Systems, *ESP32 Series Datasheet*, Espressif Systems, 2024, datasheet ESP32 DevKit 32D.
- [33] ESPHome, “Tcs34725 rgb color sensor,” <https://esphome.io/components/sensor/tcs34725/>, 2025, accessed: 2026-07-07.
- [34] Texas Instruments, *TCA9548A Low-Voltage 8-Channel I2C Switch with Reset*, Texas Instruments, 2024, datasheet TCA9548A.
- [35] Adafruit Industries, “Adafruit tca9548a 1-to-8 i2c multiplexer breakout,” <https://learn.adafruit.com/adafruit-tca9548a-1-to-8-i2c-multiplexer-breakout/overview>, 2025, accessed: 2026-07-07.
- [36] Analog Devices, *DS3231: Extremely Accurate I2C-Integrated RTC/TCXO/Crystal*, Analog Devices, 2024, datasheet, Rev. 10.

- [37] Components101, “DS3231 RTC Module Pinout, Circuit and Datasheet,” <https://components101.com/modules/ds3231-rtc-module-pinout-circuit-datasheet>, 2018, accessed: 2026-07-07.
- [38] JOY-iT, “Ky-032 obstacle detector,” <https://sensorkit.joy-it.net/en/sensors/ky-032>, 2025, accessed: 2026-07-07.
- [39] Keyes Electronics, *KY-032 Infrared Obstacle Avoidance Sensor Module*, Keyes Electronics, 2023, datasheet KY-032.
- [40] FlyRobo. (2026) Lm2596 dc buck step down power converter module. [Online]. Available: <https://www.flyrobo.in/lm2596-dc-buck-step-down-power-converter-module>
- [41] Texas Instruments, *LM2596 SIMPLE SWITCHER Power Converter*, Texas Instruments, 2024, datasheet LM2596.
- [42] Amazon Canada, “XL4016e1 dc-dc voltage regulator converter adjustable buck step-down module,” <https://www.amazon.ca/dp/B0C674RJMZ>, 2026, accessed: 2026-07-09.
- [43] XLSEMI, *XL4016 8A 180kHz Buck DC-DC Converter Datasheet*, XLSEMI, 2023, datasheet XL4016E1.
- [44] Shopee Indonesia, “Motor dc gearbox kuning dan roda diy 1:48 robot murah,” <https://shopee.co.id/Motor-DC-Gearbox-Kuning-dan-Roda-DIY-1-48-Robot-Murah-i.66424740.8686641393>, 2026, accessed: 2026-07-09.
- [45] TT Motor, *TT DC Gear Motor Specifications*, TT Motor, 2023, datasheet Motor DC Gearbox TT.
- [46] EasyWare Electronics, “L298n mini stepper motor driver module kontrol motor dc ganda dan stepper untuk arduino,” <https://www.easyware.co.id/product/l298n-mini-stepper-motor-driver-module-kontrol-motor-dc-ganda-dan-stepper-untuk-arduino/>, 2026, accessed: 2026-07-07.
- [47] STMicroelectronics, *L298 Dual Full Bridge Driver Datasheet*, STMicroelectronics, 2024, datasheet L298N.

- [48] Amazon, “Beffkkip mg90s 9g micro servo motor metal gear for rc robot car plane helicopter mini servos for arduino project,” <https://www.amazon.com/Beffkkip-Helicopter-Servos-Arduino-Project/dp/B07L6FZVT1>, 2026, accessed: 2026-07-07.
- [49] TowerPro, *MG90S Metal Gear Micro Servo Specifications*, TowerPro, 2023, datasheet Servo MG90S.
- [50] Tokopedia, “Relay modul 2 channel ch 5v module pcb hitam,” <https://www.tokopedia.com/adawwinostore/relay-modul-2-channel-ch-5v-module-pcb-hitam-9428f>, 2026, accessed: 2026-07-09.
- [51] Blibli, “Modul lampu led samsung saso ip68 smd 2835 dc 12v module 1.5 watt 3 titik mata motor mobil neon box korea,” <https://www.blibli.com/p/modul-lampu-led-samsung-saso-ip68-smd-2835-dc-12v-module-1-5-watt-1-5w-3-titik-mata-rps--GAD-60045-00468>, 2026, accessed: 2026-07-07.
- [52] Shopee Marketplace, “DC 12V 200W Switching Power Supply,” 2025. [Online]. Available: <https://id.shp.ee/JW2d7mmJ>