

BIBLIOGRAPHY

- [1] X. Cao, H. Wu, C. G. Viejo, F. R. Dunshea, and H. A. R. Suleria, "Effects of postharvest processing on aroma formation in roasted coffee – a review," Mar. 01, 2023, *John Wiley and Sons Inc.* doi: 10.1111/ijfs.16261.
- [2] M. M. Urugo, Y. B. Tola, B. T. Kebede, and O. Ogah, "Insight into the effects of environmental variables on the physicochemical characteristics and biochemical composition of green Arabica coffee," *Beverage Plant Research*, vol. 4, Jun. 2024, doi: 10.48130/bpr-0024-0021.
- [3] E. K. Pramono and others, "Low Cost Telemonitoring Technology of Semispherical Solar Dryer for Drying Arabica Coffee Beans," *INMATEH Agricultural Engineering*, vol. 66, no. 1, pp. 233–242, 2022.
- [4] TechnoServe, "Coffee Wet Mill Processing Guide," 2022. [Online]. Available: <https://www.technoserve.org/wp-content/uploads/2022/03/TechnoServe-Wet-Mill-Processing-Guide.pdf>
- [5] C. López-Rodríguez *et al.*, "Biocontrol of Ochratoxin A-Producing Fungi Associated with Coffee by Native Yeast Strains: Efficacy and Mechanisms of Action," *Journal of Fungi*, vol. 10, no. 2, p. 152, 2024, doi: 10.3390/jof10020152.
- [6] J. Błaszkiwicz and others, "Effect of Green and Roasted Coffee Storage Conditions on Selected Characteristic Quality Parameters," *Sci. Rep.*, vol. 13, no. 1, p. 6380, 2023, doi: 10.1038/s41598-023-33609-x.
- [7] L. Anokye-Bempah and others, "Design, Calibration and Validation of an Inline Green Coffee Moisture Estimation System Using Time-Domain Reflectometry," *J. Food Eng.*, 2023.
- [8] Badan Standardisasi Nasional (BSN), "SNI 01-2907-2008: Biji Kopi," 2008.
- [9] N. Adnan and et al., "A Near Infrared (NIR) study on green coffee: correlation between moisture content and spectral characteristics," *J. Food Eng.*, vol. 209, pp. 62–70, 2017, doi: 10.1016/j.jfoodeng.2017.04.012.
- [10] International Coffee Organization (ICO) and European Coffee Federation (ECF), "Quality standards for green coffee beans and moisture content limits," 2023. [Online]. Available: <https://www.ecf-coffee.org/standards-and-practices/green-coffee-quality-standards>
- [11] C. Singh, A. N. Wojewska, U. M. Persson, and S. L. Bager, "Coffee producers' perspectives of blockchain technology in the context of sustainable global value chains," *Frontiers in Blockchain*, vol. 5, p. 955463, 2022, doi: 10.3389/fbloc.2022.955463.
- [12] R. Damayanti, W. D. Ristianingrum, N. Ubaidillah, D. Firmanda, and A. Riza, "Prediction of Robusta green bean coffee moisture content based on bioelectric properties with artificial neural network method".
- [13] H. N. Bulus, "Adaptive Neuro-Fuzzy Inference System and Artificial Neural Network Models for Predicting Time-Dependent Moisture Levels in Hazelnut Shells (*Corylus avellana* L.) and Prina (*Oleae europaeae* L.)," *Processes*, vol. 12, no. 8, Aug. 2024, doi: 10.3390/pr12081703.
- [14] C. Cervini *et al.*, "Interacting climate change factors (CO₂ and temperature cycles) effects on growth, secondary metabolite gene expression and phenotypic ochratoxin A production by *Aspergillus carbonarius* strains on a

- grape-based matrix,” *Fungal Biol.*, vol. 125, no. 2, pp. 115–122, Feb. 2021, doi: 10.1016/j.funbio.2019.11.001.
- [15] H. A. Palacios-Cabrera *et al.*, “Effect of Temperature and Relative Humidity during Transportation on Green Coffee Bean Moisture Content and Ochratoxin A Production,” 2007.
- [16] P. Jakkaew, Y. Yingchutrakul, and N. Aunsri, “A data-driven approach to improve coffee drying: Combining environmental sensors and chemical analysis,” *PLoS One*, vol. 19, no. 2 February, Feb. 2024, doi: 10.1371/journal.pone.0296526.
- [17] K. Anokye-Bempah and others, “Design, Calibration, and Validation of a Prototype Inline System for Measuring the Moisture Content of Green Coffee Beans,” *J. Food Eng.*, vol. 341, p. 111342, 2023, doi: 10.1016/j.jfoodeng.2022.111342.
- [18] L. M. Costa, V. Ferreira, J. Menezes, D. Oliveira, and M. Barros, “Water Sorption Isotherms and Mid-Infrared Spectra of Dried Parchment Coffee Beans (*Coffea arabica* L.) Processed by Wet and Semi-Dry Post-Harvest Methods,” *Data Brief*, vol. 61, p. 110112, 2024, [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S235234092400920X>
- [19] G. A. Collazos-Escobar, V. Hurtado-Cortés, A. F. Bahamón-Monje, and N. Gutiérrez-Guzmán, “Water sorption isotherms and mid-infrared spectra of dried parchment coffee beans (*Coffea arabica* L.) processed by wet and semi-dry postharvest methods. A dataset for estimating water sorption and thermodynamic properties.,” *Data Brief*, vol. 57, Dec. 2024, doi: 10.1016/j.dib.2024.110958.
- [20] A. Soussi, S. Benhalima, and M. Kammoun, “Smart Sensors and Smart Data for Precision Agriculture,” *Sensors*, vol. 24, no. 8, p. 2647, 2024, doi: 10.3390/s24082647.
- [21] T. Miller, “The IoT and AI in Agriculture: The Time Is Now,” *Sensors*, vol. 25, no. 12, p. 3583, 2025, doi: 10.3390/s25123583.
- [22] Arduino, “Arduino IDE — Download & Features,” 2024. [Online]. Available: <https://www.arduino.cc/en/software>
- [23] Arduino, “The Autocomplete Feature (IDE 2),” Oct. 2024. [Online]. Available: <https://docs.arduino.cc/software/ide-v2/tutorials/ide-v2-autocomplete-feature>
- [24] Eclipse Foundation, “Eclipse Mosquitto — An open source MQTT broker (supports MQTT 5.0, 3.1.1, 3.1),” 2025. [Online]. Available: <https://github.com/eclipse-mosquitto/mosquitto>
- [25] N. S. Alotaibi and others, “Secure Enhancement for MQTT Protocol Using Distributed Ledger Techniques,” *Sensors*, vol. 24, no. 5, p. 1638, 2024, doi: 10.3390/s24051638.
- [26] H. J. Jara Ochoa and others, “Comparative Analysis of Power Consumption between MQTT QoS Levels under TLS,” *Sensors*, vol. 23, no. 10, p. 4896, 2023, doi: 10.3390/s23104896.
- [27] Espressif Systems, “ESP32 Overview — Features and Specifications,” 2025. [Online]. Available: <https://www.espressif.com/en/products/socs/esp32>
- [28] Sensirion AG, “Datasheet SHT3x (Digital Humidity and Temperature Sensor),” 2024. [Online]. Available:

- https://sensirion.com/media/documents/33E878FA/616A3FF2/Sensirion_Humidity_Sensors_SHT3x_Datasheet.pdf
- [29] Sensirion AG, “Application Note: Handling of Humidity Sensors in High Humidity Conditions (SHT3x Series),” 2022. [Online]. Available: https://sensirion.com/media/documents/AB37C76D/616A3FF2/Sensirion_Humidity_Sensors_Handling_in_High_Humidity_Conditions.pdf
- [30] Zhengzhou Winsen Electronics Technology Co. Ltd., “MH-Z19C NDIR CO₂ Sensor User Manual,” 2025. [Online]. Available: <https://www.winsen-sensor.com/sensors/co2-sensor/mh-z19c.html>
- [31] T. Barrett and A. K. Mishra, “Statistical Study of Sensor Data and Investigation of ML-based Calibration Algorithms for Inexpensive Sensor Modules: Experiments From Cape Point,” *arXiv preprint*, Oct. 2025, [Online]. Available: <https://arxiv.org/abs/2503.13487>
- [32] Espressif Systems, “LED Control (LEDC) — ESP32 API Reference,” 2025. [Online]. Available: <https://docs.espressif.com/projects/espidf/en/stable/esp32/api-reference/peripherals/ledc.html>
- [33] PUI Audio, “IEC 60601-1-8 Application Guide,” 2024. [Online]. Available: <https://puiaudio.com/wp-content/uploads/2024/11/IEC-60601-8-Application-Guide.pdf>
- [34] International Organization for Standardization, “ISO 22324:2022 — Security and resilience — Emergency management — Guidelines for colour-coded alerts,” 2022. [Online]. Available: <https://cdn.standards.iteh.ai/samples/84559/b2ba3c8667924148a35db4f45343c877/ISO-22324-2022.pdf>
- [35] Espressif Systems, “LED Control (LEDC) — ESP32 API Reference,” 2025. [Online]. Available: <https://docs.espressif.com/projects/espidf/en/stable/esp32/api-reference/peripherals/ledc.html>
- [36] M. N. Hidayat, H. Hazarika, and H. Kanaya, “Calibration and Performance Evaluation of Cost-Effective Capacitive Moisture Sensor in Slope Model Experiments,” *Sensors*, vol. 24, no. 24, p. 8156, 2024, doi: 10.3390/s24248156.
- [37] A. A. Abdelmoneim, C. M. Al Kalaany, R. Khadra, B. Derardja, and G. Dragonetti, “Calibration of Low-Cost Capacitive Soil Moisture Sensors for Irrigation Management Applications,” *Sensors*, vol. 25, no. 2, p. 343, 2025, doi: 10.3390/s25020343.
- [38] Texas Instruments, “PCF8574 Remote 8-Bit I/O Expander for I²C Bus,” 2024. [Online]. Available: <https://www.ti.com/lit/ds/symlink/pcf8574.pdf>
- [39] K. Alsayaydeh, M. Al-Khassaweneh, H. Bani-Salameh, O. Mahasneh, W. Alrababah, and L. Alawneh, “Enhancing Vehicle Safety: A Comprehensive Accident Detection and Alert System,” *Int. J. Adv. Comput. Sci. Appl.*, vol. 14, no. 11, pp. 103–111, 2023, doi: 10.14569/IJACSA.2023.0141112.
- [40] R. G. Govender and D. W. Govender, “Using Robotics in the Learning of Computer Programming: Student Experiences Based on Experiential Learning Cycles,” *Educ. Sci. (Basel)*, vol. 13, no. 3, p. 322, 2023, doi: 10.3390/educsci13030322.
- [41] S. Raghunath and others, “Developing an IoT-Enabled Smart Helmet for Worker Safety,” *Safety*, vol. 11, no. 3, p. 89, 2025, doi: 10.3390/safety11030089.

- [42] M. Sanei, S. Atcitty, and F. Moreu, “Low-Cost Efficient Wireless Intelligent Sensor (LEWIS) for Research and Education,” *Sensors*, vol. 24, no. 16, p. 5308, 2024, doi: 10.3390/s24165308.
- [43] D. Hercog, T. Lerher, M. Truntič, and O. Težak, “Design and Implementation of ESP32-Based IoT Devices,” *Sensors*, vol. 23, no. 15, p. 6739, 2023, doi: 10.3390/s23156739.
- [44] M. Ventimiglia, A. Scirè, A. Trifiletti, and A. Scolari, “On-State Voltage Measurement Circuit for Condition Monitoring of Power MOSFETs in DC–DC Converters,” *Electronics (Basel)*, vol. 13, no. 19, p. 3902, 2024, doi: 10.3390/electronics13193902.
- [45] C. B. Tan and L. Siek, “A 10 V-to-1 V Double Step-Down Buck Converter Using Time-Based Current-Mode Control,” *Journal of Low Power Electronics and Applications*, vol. 14, no. 4, p. 58, 2024, doi: 10.3390/jlpea14040058.
- [46] J. Lee, S.-M. Kim, and H.-S. Park, “Performance Evaluation and Design of USB Micro-B and Type-C Connectors for Portable IoT Devices,” *IEEE Transactions on Consumer Electronics*, vol. 69, no. 4, pp. 451–460, 2023, doi: 10.1109/TCE.2023.3320158.
- [47] Q. Huang, R. Chen, X. Wang, and L. Zhou, “Investigation on Power Integrity of USB Power Delivery Systems under Dynamic Load Conditions,” *Electronics (Basel)*, vol. 13, no. 3, p. 527, 2024, doi: 10.3390/electronics13030527.
- [48] Ł. Apiecionek, “Fully Scalable Fuzzy Neural Network for Data Processing,” *Sensors*, vol. 24, no. 16, p. 5169, 2024, doi: 10.3390/s24165169.
- [49] T. Salameh, A. Al-Salaymeh, and A. Al-Fuqaha, “Adaptive Neuro-Fuzzy Inference System for Accurate Power Forecasting,” *Energy Reports*, vol. 11, pp. 1463–1475, 2025, doi: 10.1016/j.egy.2025.03.090.
- [50] M. Casari, D. De Luca, S. Mariani, and E. Rizzi, “Optimisation of the Adaptive Neuro-Fuzzy Inference System (ANFIS) for Low-Cost Sensor Data,” *Measurement*, vol. 224, p. 115917, 2024, doi: 10.1016/j.measurement.2024.115917.