

REFERENCES

- [1] “Tuna fish market size, share, growth, forecast, 2032,” <https://www.fortunebusinessinsights.com/industry-reports/tuna-fish-market-100744>, 2024, accessed: 2024-10-15.
- [2] N. Swetha and S. K. Mathanghi, “Towards sustainable omega-3 fatty acids production – a comprehensive review on extraction methods, oxidative stability and bio-availability enhancement,” *Food Chemistry Advances*, vol. 4, p. 100603, Jan. 2024.
- [3] “Global tuna fish market size, trends, share, forecast 2032,” <https://www.custommarketinsights.com/report/tuna-fish-market/>, 2024, accessed: 2024-10-15.
- [4] L. Zahara and S. Sartiyah, “Analysis of production management in sharia perspective (study on three tuna fish companies in banda aceh city),” *International Journal of Kita Kreatif*, vol. 1, no. 3, Aug. 2024. [Online]. Available: <http://dx.doi.org/10.24815/ijkk.v1i3.40926>
- [5] K. Naziba Tahsin, “A review on the techniques for quality assurance of fish and fish products,” *International Journal of Advanced Research in Science and Engineering*, vol. 4, pp. 4190–4206, 07 2017.
- [6] M. Pal, A. Ketema, M. Anberber, S. Mulu, and Y. Dutta, “Microbial quality of fish and fish products,” vol. 43, pp. 46–49, 01 2016.
- [7] “The Largest Integrated Fisheries Commerce In Indonesia - Aruna — aruna.id,” <https://aruna.id/>, [Accessed 23-04-2025].
- [8] E. C. Medeiros, L. M. Almeida, and J. G. d. A. T. Filho, “Computer vision and machine learning for tuna and salmon meat classification,” *Informatics*, vol. 8, no. 4, p. 70, Oct. 2021. [Online]. Available: <http://dx.doi.org/10.3390/informatics8040070>
- [9] A. Khan, A. Laghari, and S. Awan, “Machine learning in computer vision: A review,” *ICST Transactions on Scalable Information Systems*, p. 169418, Jul. 2018. [Online]. Available: <http://dx.doi.org/10.4108/eai.21-4-2021.169418>

- [10] R. Vashishth, A. Pandey, P. Kaur, and A. Semwal, *Smart Technologies in Food Manufacturing*, 05 2022, pp. 125–155.
- [11] Y. Deng, “Deep learning on mobile devices: a review,” in *Mobile Multimedia/Image Processing, Security, and Applications 2019*, S. S. Agaian, S. P. DelMarco, and V. K. Asari, Eds. SPIE, May 2019.
- [12] J. Kim, H. Zeng, D. Ghadiyaram, S. Lee, L. Zhang, and A. C. Bovik, “Deep convolutional neural models for picture-quality prediction: Challenges and solutions to data-driven image quality assessment,” *IEEE Signal Processing Magazine*, vol. 34, no. 6, pp. 130–141, 2017.
- [13] Y. Gong, G. Liu, Y. Xue, R. Li, and L. Meng, “A survey on dataset quality in machine learning,” *Inf. Softw. Technol.*, vol. 162, no. C, Oct. 2023. [Online]. Available: <https://doi.org/10.1016/j.infsof.2023.107268>
- [14] X. Feng, Y. Jiang, X. Yang, M. Du, and X. Li, “Computer vision algorithms and hardware implementations: A survey,” *Integr. VLSI J.*, vol. 69, no. C, p. 309–320, Nov. 2019. [Online]. Available: <https://doi.org/10.1016/j.vlsi.2019.07.005>
- [15] I. G. S. E. Putra, I. K. G. Darma Putra, M. Sudarma, and A. A. Kompiang Oka Sudana, “Classification of tuna meat grade quality based on color space using wavelet and k-nearest neighbor algorithm,” in *2023 International Conference on Smart-Green Technology in Electrical and Information Systems (ICSGTEIS)*. IEEE, Nov. 2023, p. 35–40. [Online]. Available: <http://dx.doi.org/10.1109/icsgteis60500.2023.10424189>
- [16] P. Patel and A. Thakkar, “The upsurge of deep learning for computer vision applications,” *International Journal of Electrical and Computer Engineering (IJECE)*, vol. 10, no. 1, p. 538, Feb. 2020. [Online]. Available: <http://dx.doi.org/10.11591/ijece.v10i1.pp538-548>
- [17] J. E. C. Rosal, D. I. E. Hisola, and M. S. Demabildo, “Grade classification of yellowfin tuna meat using f-rcnn with inception v2 architecture,” in *2023 IEEE International Conference on Artificial Intelligence in Engineering and Technology (IICAJET)*. IEEE, Sep. 2023, p. 252–256. [Online]. Available: <http://dx.doi.org/10.1109/iicaiet59451.2023.10291786>
- [18] J. Jayasundara, R. Ramanayake, H. Senarath, H. Herath, G. Godaliyadda, M. Ekanayake, H. Herath, and S. Ariyawansa, “Deep learning for automated

- fish grading,” *Journal of Agriculture and Food Research*, vol. 14, p. 100711, Dec. 2023. [Online]. Available: <http://dx.doi.org/10.1016/j.jafr.2023.100711>
- [19] M. Naimullah, F. Sthevanie, and K. N. Ramadhani, “Tuna meat grade classification using color histogram and grey level co-occurrence matrix,” *eProceedings of Engineering*, vol. 7, no. 2, 2020.
- [20] Badan Pengawas Obat dan Makanan, “Peraturan Badan Pengawas Obat dan Makanan Nomor 13 Tahun 2023 tentang Kategori Pangan,” <https://peraturan.go.id>, Jakarta, Indonesia, June 2023, berita Negara Republik Indonesia No. 428, 2023.
- [21] Pemerintah Pusat Republik Indonesia, “Undang-Undang Nomor 1 Tahun 2024 tentang Perubahan Kedua atas Undang-Undang Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik,” <https://jdih.setneg.go.id>, Jakarta, Indonesia, January 2024, lembaran Negara Republik Indonesia Tahun 2024 Nomor 1, Tambahan Lembaran Negara Nomor 6905.
- [22] R. Resnia, B. Wicaksana, and Z. Salim, “Kesesuaian sni dengan standar internasional dan standar mitra dagang pada produk ekspor perikanan tuna dan cakalang,” *Jurnal Standardisasi*, vol. 17, p. 87, 09 2016.
- [23] “Home — iss-foundation.org,” <https://www.iss-foundation.org/>, [Accessed 24-04-2025].
- [24] National Seafood HACCP Alliance for Training and Education, “Seafood HACCP Models: Fresh Tuna Loins (Commercial Processing Example),” <https://www.afdo.org/seafoodhaccp/>, USA, September 2020, revised September 2020. Based on FDA’s Fish and Fishery Products Hazards and Control Guidance (4th edition, 2020).
- [25] International Organization for Standardization, *ISO 22000:2018 — Food safety management systems — Requirements for any organization in the food chain*, <https://www.iso.org/standard/65464.html>, ISO Std., June 2018, second edition. Reference number: ISO 22000:2018(E).
- [26] “Welcome to Python.org — python.org,” <https://www.python.org/>, [Accessed 24-04-2025].
- [27] “PyTorch — pytorch.org,” <https://pytorch.org/>, [Accessed 24-04-2025].
- [28] “Project Jupyter — jupyter.org,” <https://jupyter.org/>, [Accessed 24-04-2025].

- [29] “Home — opencv.org,” <https://opencv.org/>, [Accessed 24-04-2025].
- [30] “NumPy — numpy.org,” <https://numpy.org/>, [Accessed 24-04-2025].
- [31] “Albumentations Transforms — explore.albumentations.ai,” <https://explore.albumentations.ai/>, [Accessed 24-04-2025].
- [32] “Flutter - Build apps for any screen — flutter.dev,” <https://flutter.dev/>, [Accessed 24-04-2025].
- [33] “Firebase — Google’s Mobile and Web App Development Platform — firebase.google.com,” <https://firebase.google.com/>, [Accessed 24-04-2025].
- [34] B. Thai, G. Deng, and R. Ross, “A fast white balance algorithm based on pixel greyness,” *Signal, Image and Video Processing*, vol. 11, pp. 525–532, 2017.
- [35] R. C. Gonzalez and R. E. Woods, *Digital Image Processing, Global Edition*, 4th ed. London, England: Pearson Education, Sep. 2017.
- [36] T. P. H. Nguyen, Z. Cai, K. Nguyen, S. Keth, N. Shen, and M. Park, “Pre-processing image using brightening, clahe and retinex,” 2020. [Online]. Available: <https://arxiv.org/abs/2003.10822>
- [37] C. Shorten and T. M. Khoshgoftaar, “A survey on image data augmentation for deep learning,” *Journal of big data*, vol. 6, no. 1, pp. 1–48, 2019.
- [38] M. Xu, S. Yoon, A. Fuentes, and D. S. Park, “A comprehensive survey of image augmentation techniques for deep learning,” *Pattern Recognition*, vol. 137, p. 109347, 2023.
- [39] I. Loshchilov and F. Hutter, “Sgdr: Stochastic gradient descent with warm restarts,” 2017. [Online]. Available: <https://arxiv.org/abs/1608.03983>
- [40] D. P. Kingma and J. Ba, “Adam: A method for stochastic optimization,” 2017. [Online]. Available: <https://arxiv.org/abs/1412.6980>
- [41] I. Loshchilov and F. Hutter, “Decoupled weight decay regularization,” 2019. [Online]. Available: <https://arxiv.org/abs/1711.05101>
- [42] L. N. Smith, “Cyclical learning rates for training neural networks,” 2017. [Online]. Available: <https://arxiv.org/abs/1506.01186>
- [43] M. Tan and Q. V. Le, “Efficientnetv2: Smaller models and faster training,” 2021. [Online]. Available: <https://arxiv.org/abs/2104.00298>

- [44] “torchvision.models.efficientnet &x2014; Torchvision main documentation — pytorch.org,” https://pytorch.org/vision/main/_modules/torchvision/models/efficientnet.html#efficientnet_v2_m, [Accessed 24-04-2025].
- [45] “scikit-learn: machine learning in Python &x2014; scikit-learn 0.16.1 documentation — scikit-learn.org,” <https://scikit-learn.org/>, [Accessed 24-04-2025].
- [46] “Matplotlib &x2014; Visualization with Python — matplotlib.org,” <https://matplotlib.org/>, [Accessed 24-04-2025].
- [47] C. da Costa-Luis, “tqdm documentation — tqdm.github.io,” <https://tqdm.github.io/>, [Accessed 24-04-2025].
- [48] “seaborn: statistical data visualization &x2014; seaborn 0.13.2 documentation — seaborn.pydata.org,” <https://seaborn.pydata.org/>, [Accessed 24-04-2025].
- [49] “os — Miscellaneous operating system interfaces — docs.python.org,” <https://docs.python.org/3/library/os.html>, [Accessed 24-04-2025].
- [50] J. Brooke, “Sus: A quick and dirty usability scale,” *Usability Eval. Ind.*, vol. 189, 11 1995.