

## DAFTAR PUSTAKA

- Afaq, S., & Rao, S. (2020). Significance Of Epochs On Training A Neural Network. *Journal Of Scientific & Technology Research*, 9(06).
- Aini, Q., Lutfiani, N., Kusumah, H. and Zahran, M.S., 2021. Deteksi dan Pengenalan Objek Dengan Model Machine Learning: Model Yolo. *CESS (Journal of Computer Engineering, System and Science)*, 6(2), p.192.
- Alfiano, O. and Rahayu, S., 2024. Implementasi Algoritma Deep Learning YOLO (You Only Look Once) Untuk Deteksi Kualitas Kentang Segar Dan Busuk Secara Real Time. *Journal of Research and Publication Innovation*, 2(3), pp.2470-2478.
- Alzubaidi, L., Zhang, J., Humaidi, A.J., Al-Dujaili, A., Duan, Y., Al-Shamma, O., Santamaría, J., Fadhel, M.A., Al-Amidie, M. and Farhan, L., 2021. Review of deep learning: concepts, CNN architectures, challenges, applications, future directions. *Journal of big Data*, 8, pp.1-74.
- Andrekhya, M.Z., dan Huda, Y., 2021. Deteksi Warna Manggis Menggunakan Pengolahan Citra dengan Opencv Python. *Jurnal VOTETEKNIKA (Vocational Teknik Elektronika dan Informatika)*, 9(4), pp. 27-33.
- Aras, S., Tanra, P. and Bazhar, M., 2024. Deteksi Tingkat Kematangan Buah Tomat Menggunakan YOLOv5: Detection of Tomato Fruit Ripeness Level Using YOLOv5. *MALCOM: Indonesian Journal of Machine Learning and Computer Science*, 4(2), pp.623-628.
- Bahri, S., Masuku, M.A., dan Salim, A., 2021. Karakteristik Biji Kakao Kering (*Theobroma cacao* L) Hasil Perkebunan Petani Kakao di Kecamatan Oba, Kota Tidore Kepulauan. *Cannarium (Jurnal Ilmu-Ilmu Pertanian)*, 19(1), pp. 18-36.
- Bajić Jr, M. and Potočnik, B., 2023. UAV thermal imaging for unexploded ordnance detection by using deep learning. *Remote sensing*, 15(4), p.967.
- Binghay, N.A., Quezon, K.A., Montero, V.J., Calamba, M. and Empas, P.E., 2023, December. Object Detection Approach for Batch Detection of Cacao Bean Defects. In *2023 International Conference on Electrical, Communication and Computer Engineering (ICECCE)* (pp. 1-6). IEEE.
- Bochkovskiy, A., Wang, C.Y. and Liao, H.Y.M., 2020. YOLOv4: Optimal Speed and Accuracy of Object Detection. *arXiv preprint arXiv:2004.10934*.
- BPS., 2023. *Statistik Kakao Indonesia 2022*, Vol. 7. Badan Pusat Statistik (BPS - Statistik Indonesia). Jakarta.

- Brownlee, J., 2018. What is the Difference Between a Batch and an Epoch in a Neural Network. *Machine learning mastery*, 20, pp.1-5.
- BSN., 2008. *SNI Biji Kakao 01-2323-2008*. Badan Standarisasi Nasional. Jakarta.
- Budiharto, W., 2017. *Machine Learning dan Komputasional Intelligence*. Penerbit Andi. Yogyakarta.
- Chandana, R.K. and Ramachandra, A.C., 2022. Real time object detection system with YOLO and CNN models: A review. *arXiv Prepr. arXiv2208*, 773.
- Chavolla, E., Zaldivar, D., Cuevas, E., dan Perez, M.A., 2018. Color spaces Advantages and Disadvantages in Image Color Clustering Segmentation. *Advances in soft computing and machine learning in image processing*, pp. 3-22.
- Cowton, J., Kyriazakis, I. and Bacardit, J., 2019. Automated individual pig localisation, tracking and behaviour metric extraction using deep learning. *IEEE Access*, 7, pp.108049-108060.
- David, J., dan Manurung, G.O., 2017. Perbaikan Mutu Biji Kakao dengan Perlakuan Suhu Pengeringan dan Fermentasi di Kalimantan barat. *Prosiding Seminar Nasional Agroinovasi Spesifik Lokasi Untuk Ketahanan Pangan Pada Era Masyarakat Ekonomi ASEAN*, pp. 1290-1295.
- Delimayanti, M.K., Sari, R., Laya, M., Faisal, M.R., dan Pahrul, P., 2021. Pemanfaatan Metode Multiclass-SVM pada Model Klasifikasi Pesan Bencana Banjir di Twitter. *Edu Komputika Journal*, 8(1), pp. 39-47.
- Diansari, A.Z., Suwasono, S., dan Yuwanti, S., 2016. Karakteristik Fisik, Kimia, dan Mikrobiologis Biji Kakao Kering Produksi PTPN XII Kebun Kalikempit, Banyuwangi. *Jurnal Berkala Ilmiah Pertanian*, 1(1), pp. 1-7.
- Dinata, R.K., dan Hasdyna, N., 2020. *Machine Learning*. UNIMAL Press. Lhokseumawe.
- Diwan, T., Anirudh, G. and Tembhurne, J.V., 2023. Object detection using YOLO: Challenges, architectural successors, datasets and applications. *multimedia Tools and Applications*, 82(6), pp.9243-9275.
- Eakeshwari, V., Sai Harika, E., Vishnuvardhan Reddy, V., Divyamsh Reddy, A., Prasanthi, K. and Kavitha, S., 2022. SEED QUALITY TESTING USING DEEP LEARNING AND YOLO V5. *International Journal of Recent Scientific Research* Vol. 13, Issue, 05 (B), pp. 1158-1161.
- Fahrurrozi, P.L., Ratnakomala, S., Fauziyyah, S., dan Sari, M.N., 2020. *Teknologi Fermentasi dan Pengolahan Biji Kakao*. LIPI Press. Jakarta.

- Gunasekaran, S., 1996. Computer Vision Technology For Food Quality Assurance. *Trends in Food Science & Technology*, 7(8), pp. 245-256.
- Hatmi, U.R., dan Rustijarno, S., 2012. Teknologi Pengolahan Biji Kakao Menuju SNI Biji Kakao 01-2323-2008. *Balai Pengkajian Teknologi Pertanian*. Yogyakarta.
- Hortinela, C.C. and Tupas, K.J.R., 2022, July. Classification of Cacao Beans Based on their External Physical Features Using Convolutional Neural Network. In *2022 IEEE Region 10 Symposium (TENSyMP)* (pp. 1-5). IEEE.
- Horvat, M. and Gledec, G., 2022, September. A comparative study of YOLOv5 models performance for image localization and classification. In *33rd Central European Conference on Information and Intelligent Systems (CECIIS)* (Vol. 349).
- Husnan, H., Fatichah, C. and Dikairono, R., 2023. Deteksi Objek Menggunakan Metode YOLO dan Implementasinya pada Robot Bawah Air. *Jurnal Teknik ITS*, 12(3), pp.A221-A226.
- ICCO, 2023. *ICCO Quarterly Bulletin of Cocoa Statistics*, Vol. XLIX, No. 4, Cocoa year 2022/2023.
- Justus, D., Brennan, J., Bonner, S. and McGough, A.S., 2018, December. Predicting the computational cost of deep learning models. In *2018 IEEE international conference on big data (Big Data)* (pp. 3873-3882). IEEE.
- Kahlil, M.R.M., Laksono Kurnianggoro, Mahendra A., dan Nona Zarima, F.N., 2023. *Computer Vison Berbasis Deep Learning untuk Aplikasi Pertanian: Teori dan Praktik*. Syiah Kuala University Press. Aceh.
- Kang, C.H. and Kim, S.Y., 2023. Real-time object detection and segmentation technology: an analysis of the YOLO algorithm. *JMST Advances*, 5(2), pp.69-76.
- Karimi, Z., 2021. Confusion Matrix. *Encycl. Mach. Learn. Data Min.*, no. October, pp. 260-260.
- Khuriyati, N., Pamungkas, A.P., dan Pambudi, A.A., 2019. The Sorting and Grading of Red Chilli Peppers (*Capsicum annuum* L.) Using Digital Image Processing. *SSRG International Journal of Agriculture & Environmental Science*, 6(4), pp. 17-23.
- Koech, K.E., 2020. Object detection metrics with worked example. *Towards Data Science*.
- Lawi, A. and Adhitya, Y., 2018, March. Classifying physical morphology of cocoa beans digital images using multiclass ensemble least-squares support vector

- machine. In *Journal of Physics: Conference Series* (Vol. 979, No. 1, p. 012029). IOP Publishing.
- Lou, H., Duan, X., Guo, J., Liu, H., Gu, J., Bi, L. and Chen, H., 2023. DC-YOLOv8: small-size object detection algorithm based on camera sensor. *Electronics*, 12(10), p.2323.
- Lusiana, L., Wibowo, A. and Dewi, T.K., 2023. Implementasi Algoritma Deep Learning You Only Look Once (YOLOv5) Untuk Deteksi Buah Segar Dan Busuk. *Paspalum: Jurnal Ilmiah Pertanian*, 11(1), pp.123-130.
- Manalu, R., 2019. Pengolahan Biji Kakao Produksi Perkebunan Rakyat untuk Meningkatkan Pendapatan Petani (Processing of Smallholder Plantations Cocoa Production to Increase Farmers Income). *Jurnal Ekonomi & Kebijakan Publik*, 9(2), pp. 99-112.
- Mansour, M.Y.M.A., Dambul, K.D. and Choo, K.Y., 2022. Object detection algorithms for ripeness classification of oil palm fresh fruit bunch. *International Journal of Technology*, 13(6), pp.1326-1335.
- Menessatti P., Costa C., dan Aguzzi J., 2010. Quality Evaluation of Fish by Hyperspectral Imaging. *Journal Academic Press*, 8(1), pp. 273-294.
- Müller, A.C., dan Guido, S., 2016. *Introduction to Machine Learning with Python: a Guide for Data Scientists*. O'Reilly Media, Inc. Sebastopol.
- Nuha, M.S.U., 2022. Pemanfaatan Yolo untuk Pengenalan Kesegaran Buah Mangga. *Joutica*, 7(1), pp.513-518.
- Nurmuslimah, S., 2016. Implementasi metode backpropagation untuk mengidentifikasi jenis biji kakao yang cacat berdasarkan bentuk biji. *Network Engineering Research Operation*, 2(2).
- Palupi, L., Ihsanto, E. and Nugroho, F., 2023. Analisis Validasi dan Evaluasi Model Deteksi Objek Varian Jahe Menggunakan Algoritma Yolov5. *Journal of Information System Research (JOSH)*, 5(1), pp.234-241.
- Patel, K.K., Kar, A., Jha, S.N., dan Khan, M.A., 2012. Machine Vision System: a Tool for Quality Inspection of Food and Agricultural Products. *Journal of food science and technology*, 49, pp. 123-141.
- Permana, A.A., Wahyuddin, S., Santoso, L.W., Wibowo, G.W.N., Wardhani, A.K., Wahidin, A.J., Yuliasuti, G.E., dan Wijayanti, R.R., 2023. Machine Learning. Global Eksekutif Teknologi. Padang.
- Radiuk, P.M., 2017. Impact of Training Set Batch Size on the Performance of Convolutional Neural Networks for Diverse Datasets. *Information Technology & Management Science (Sciendo)*, 20(1).

- Redmon, J., 2016. You Only Look Once: Unified, Real-Time Object Detection. In *Proceedings of the IEEE conference on computer vision and pattern recognition*.
- Saputra, A., 2022. *Buku Sakti Pemrograman Python untuk Mengelola, Menganalisis, dan Memaparkan Data Secara Akurat*. Anak Hebat Indonesia. Yogyakarta.
- Sarker, I.H., 2021. Deep learning: a comprehensive overview on techniques, taxonomy, applications and research directions. *SN computer science*, 2(6), p.420.
- Sulistiyanti, S.R., Setyawan, F.X., dan Komarudin, M., 2016. *Pengolahan Citra, Dasar dan Contoh Penerapannya*. Teknosain. Yogyakarta.
- Suwasono, S., Savitri, D.A. and Rahman, R.Y., 2023. Upaya Peningkatan Kualitas dan Nilai Ekonomi Biji Kakao Rakyat dengan Penggunaan Semi-automatic Fermentor dan Starter Komersial. *JMM (Jurnal Masyarakat Mandiri)*, 7(2), pp.1411-1424.
- Taufiq, R.M., Rizki, Y. and Pratama, M.R.A., 2022. Simulasi Deteksi Golongan Kendaraan pada Gerbang Tol Menggunakan YOLOv4. *Jurnal CoSciTech (Computer Science and Information Technology)*, 3(2), pp.199-206.
- Thuan, D., 2021. Evolution of Yolo algorithm and Yolov5: The State-of-the-Art object detection algorithm.
- Ultralytics, 2024. A Guide on Model Testing. Retrieved from <https://docs.ultralytics.com/guides/model-testing/>
- Van Rossum, G., dan Drake Jr, F.L., 1995. *Python tutorial* (Vol. 620). Amsterdam, The Netherlands: Centrum voor Wiskunde en Informatica.
- Wang, P., Fan, E. and Wang, P., 2021. Comparative analysis of image classification algorithms based on traditional machine learning and deep learning. *Pattern recognition letters*, 141, pp.61-67.
- Xu, R., Lin, H., Lu, K., Cao, L. and Liu, Y., 2021. A forest fire detection system based on ensemble learning. *Forests*, 12(2), p.217.
- Yuwono, S.S., dan Waziiroh, E., 2017. *Teknologi pengolahan pangan hasil perkebunan*. Universitas Brawijaya Press. Malang.
- Zhan, W., Sun, C., Wang, M., She, J., Zhang, Y., Zhang, Z. and Sun, Y., 2022. An improved Yolov5 real-time detection method for small objects captured by UAV. *Soft Computing*, 26, pp.361-373.

- Zhang, H., Shao, F., He, X., Zhang, Z., Cai, Y. and Bi, S., 2023. Research on object detection and recognition method for UAV aerial images based on improved YOLOv5. *Drones*, 7(6), p.402.
- Zhang, L., Tan, J., Han, D. and Zhu, H., 2017. From machine learning to deep learning: progress in machine intelligence for rational drug discovery. *Drug discovery today*, 22(11), pp.1680-1685.
- Zheng, G., Songtao, L., Feng, W., Zeming, L. and Jian, S., 2021. YOLOX: Exceeding YOLO series in 2021. *arXiv preprint arXiv:2107.08430*.