UNIVERSITAS
GADJAH MADA
Peningkatan Performa Sistem Klasifikasi Citra Kendaraan dengan Metode Kombinasi Pengembangan ORB Dan LBP Berbasis Random Forest
Rifka Canalisa Rahayu, Dr. Danang Lelono, S.Si., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

DAFTAR PUSTAKA

Adugna, T., Xu, W., & Fan, J. (2022). Comparison of Random Forest and Support Vector Machine Classifiers for Regional Land Cover Mapping Using Coarse Resolution FY-3C Images. *Remote Sensing*, *14*(3), 574. https://doi.org/10.3390/rs14030574

AlexeyAB. (t.t.). *Yolo v4, v3 and v2 for Windows and Linux*. github. Diambil https://github.com/AlexeyAB/darknet

Al-Rawabdeh, A., Almagbile, A., Khawaldeh, A., Aldayafleh, O., Zeitoun, M., & Hazaymeh, K. (2019). *Evaluating the Performance of Corner Detection Approaches for Features Extraction from UAV Images*. ENGINEERING. https://doi.org/10.20944/preprints201906.0245.v1

Baghdadi, S., & Aboutabit, N. (2021). View-independent Vehicle Category Classification System. *International Journal of Advanced Computer Science and Applications*, *12*(7). https://doi.org/https://doi.org/10.14569/IJACSA.2021.0120786

Bansal, M., Kumar, M., Kumar, M., & Kumar, K. (2021). An efficient technique for object recognition using Shi-Tomasi corner detection algorithm. *Soft Computing*, *25*(6), 4423–4432. https://doi.org/10.1007/s00500-020-05453-y

BasicAI. (2024, Mei 23). *Preparing Data for YOLO Training: Data Annotation Techniques and Best Practices*. Medium. Preparing Data for YOLO Training: Data Annotation Techniques and Best Practices. https://medium.com/@BasicAI-Inc/data-annotation-for-yolo-model-training-techniques-and-best-practices-ad54bf0c695a

Boussaad, L., & Boucetta, A. (2024). YOLO Network-based URL Detection in Varied Conditions with Small-Sample Insights. *International Journal of Informatics and Applied Mathematics*, *7*(1), 33–56. https://doi.org/10.53508/ijiam.1406569

Breiman, L. (2001). Random Forests. *Machine Learning*, *45*(1), 5–32. https://doi.org/10.1023/A:1010933404324

Calonder, M., Lepetit, V., Strecha, C., & Fua, P. (2010). BRIEF: Binary Robust Independent Elementary Features. Dalam *Computer Vision – ECCV 2010* (Vol. 6314, hlm. 778–792). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-15561-1_56

Chang, Q., Chen, X., Li, X., Wang, W., & Miyazaki, J. (2025). Faster than Fast: Accelerating Oriented FAST Feature Detection on Low-end Embedded GPUs. *ACM Transactions on Embedded Computing Systems*, *24*(3), 1–22. https://doi.org/10.1145/3725217

Chu, G., Peng, Y., & Luo, X. (2023). ALGD-ORB: An improved image feature extraction algorithm with adaptive threshold and local gray difference. *PLOS ONE*, *18*(10), e0293111. https://doi.org/10.1371/journal.pone.0293111

COCO - Common Objects in Context. (t.t.). COCO (Common Objects in Context). Diambil 13 April 2026, dari https://cocodataset.org/#download

Harris, C., & Stephens, M. (1988). A Combined Corner and Edge Detector. *Procedings of the Alvey Vision Conference 1988*, 23.1-23.6. https://doi.org/10.5244/C.2.23

UNIVERSITAS
GADJAH MADA
Peningkatan Performa Sistem Klasifikasi Citra Kendaraan dengan Metode Kombinasi Pengembangan ORB Dan LBP Berbasis Random Forest
Rifka Canalisa Rahayu, Dr. Danang Lelono, S.Si., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Hassaballah, M., Kenk, M. A., & El-Henawy, I. M. (2020). Local binary pattern-based on-road vehicle detection in urban traffic scene. *Pattern Analysis and Applications*, *23*(4), 1505–1521. https://doi.org/10.1007/s10044-020-00874-9

Hassaballah, M., Kenk, M. A., Muhammad, K., & Minaee, S. (2021). Vehicle Detection and Tracking in Adverse Weather Using a Deep Learning Framework. *IEEE Transactions on Intelligent Transportation Systems*, *22*(7), 4230–4242. https://doi.org/10.1109/TITS.2020.3014013

Hastie, T., Tibshirani, R., & Friedman, J. (2009). *The Elements of Statistical Learning*. Springer New York. https://doi.org/10.1007/978-0-387-84858-7

Ho, N., Pham, M., Vo, N. D., & Nguyen, K. (2020). Vehicle Detection at Night Time. *2020 7th NAFOSTED Conference on Information and Computer Science (NICS)*, 250–255. https://doi.org/10.1109/NICS51282.2020.9335870

Hung, K.-F., & Lin, K.-P. (2024). Bio-Inspired Dark Adaptive Nighttime Object Detection. *Biomimetics*, *9*(3), 158. https://doi.org/10.3390/biomimetics9030158

Imsaengsuk, T., & Pumrin, S. (2021). Feature Detection and Description based on ORB Algorithm for FPGA-based Image Processing. *2021 9th International Electrical Engineering Congress (iEECON)*, 420–423. https://doi.org/10.1109/iEECON51072.2021.9440232

Ismael, A. N. (2022). A comparative Study of Image Enhancement Techniques for Natural Images. *Journal of Al-Qadisiyah for Computer Science and Mathematics*, *14*(4). https://doi.org/10.29304/jqcm.2022.14.4.1086

Jingchun, Z., Eg Su, G., & Shahrizal Sunar, M. (2024). Low-light image enhancement: A comprehensive review on methods, datasets and evaluation metrics. *Journal of King Saud University - Computer and Information Sciences*, *36*(10), 102234. https://doi.org/10.1016/j.jksuci.2024.102234

Karypidis, E., Mouslech, S. G., Skoulariki, K., & Gazis, A. (2022). Comparison Analysis of Traditional Machine Learning and Deep Learning Techniques for Data and Image Classification. *WSEAS TRANSACTIONS ON MATHEMATICS*, *21*, 122–130. https://doi.org/10.37394/23206.2022.21.19

Khan, M. Y., Qayoom, A., Nizami, M. S., Siddiqui, M. S., Wasi, S., & Raazi, S. M. K.-R. (2021). Automated Prediction of Good Dictionary EXamples (GDEX): A Comprehensive Experiment with Distant Supervision, Machine Learning, and Word Embedding-Based Deep Learning Techniques. *Complexity*, *2021*(1), 2553199. https://doi.org/10.1155/2021/2553199

Kuswantori, A., Suesut, T., Tangsrirat, W., & Nunak, N. (2022). Development of object detection and classification with YOLOv4 for similar and structural deformed fish. *EUREKA: Physics and Engineering*, (2), 154–165. https://doi.org/10.21303/2461-4262.2022.002345

Liew, W., Abdullah, M. H. L., Shahid, R., & Ahmed, A. (2023). Vehicle Types Recognition in Night-Time Scene. Dalam M. Y. Bin Alias (Ed.), *Proceedings of the Multimedia University Engineering Conference (MECON 2022)* (hlm. 139–153). Atlantis Press International BV. https://doi.org/10.2991/978-94-6463-082-4_15

UNIVERSITAS
GADJAH MADA
Peningkatan Performa Sistem Klasifikasi Citra Kendaraan dengan Metode Kombinasi Pengembangan ORB Dan LBP Berbasis Random Forest
Rifka Canalisa Rahayu, Dr. Danang Lelono, S.Si., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Lin, H., Parsi, A., Mullins, D., Horgan, J., Ward, E., Eising, C., Denny, P., Deegan, B., Glavin, M., & Jones, E. (2024). A Study on Data Selection for Object Detection in Various Lighting Conditions for Autonomous Vehicles. *Journal of Imaging*, *10*(7), 153. https://doi.org/10.3390/jimaging10070153

Lin, T.-Y., Maire, M., Belongie, S., Bourdev, L., Girshick, R., Hays, J., Perona, P., Ramanan, D., Zitnick, C. L., & Dollár, P. (2015). *Microsoft COCO: Common Objects in Context* (arXiv:1405.0312). arXiv. https://doi.org/10.48550/arXiv.1405.0312

Ma, C., Hu, X., Xiao, J., Du, H., & Zhang, G. (2020). Improved ORB Algorithm Using Three-Patch Method and Local Gray Difference. *Sensors*, *20*(4), 975. https://doi.org/10.3390/s20040975

Mahto, P., Garg, P., Seth, P., & Panda, J. (2020). *REFINING YOLOV4 FOR VEHICLE DETECTION*. *11*(5), 409–419. https://doi.org/10.34218/IJARET.11.5.2020.043

Manimozhi, S., Arumugam, S., & Rajeshwari, G. (2024). Vehicle Identification and Counting (VIC) Using Machine Learning Algorithm- ORB. *2024 4th International Conference on Data Engineering and Communication Systems (ICDECS)*, 1–4. https://doi.org/10.1109/ICDECS59733.2023.10502776

Manju, R. A., Koshy, G., & Simon, P. (2019). Improved Method for Enhancing Dark Images based on CLAHE and Morphological Reconstruction. *Procedia Computer Science*, *165*, 391–398. https://doi.org/10.1016/j.procs.2020.01.033

Miao, Y., Liu, F., Hou, T., Liu, L., & Liu, Y. (2020). A Nighttime Vehicle Detection Method Based on YOLO v3. *2020 Chinese Automation Congress (CAC)*, 6617–6621. https://doi.org/10.1109/CAC51589.2020.9326819

Moravec, H. P. (1980). *Obstacle Avoidance and Navigatio n in the Real World by a Seeing Robot Rover*. https://api.semanticscholar.org/CorpusID:128525458

Navaneeth, R., Stephen, J., Nandakumar, N., & Nair T., R. (2020). An Evaluation of Different Extraction Methods and Support Vector Machine Kernels for Vehicle Type Classification. *2020 Fourth International Conference on Computing Methodologies and Communication (ICCMC)*, 694–698. https://doi.org/10.1109/ICCMC48092.2020.ICCMC-000129

Ojala, T., Pietikäinen, M., & Harwood, D. (1996). A comparative study of texture measures with classification based on featured distributions. *Pattern Recognition*, *29*(1), 51–59. https://doi.org/10.1016/0031-3203(95)00067-4

O'Mahony, N., Campbell, S., Carvalho, A., Harapanahalli, S., Hernandez, G. V., Krpalkova, L., Riordan, D., & Walsh, J. (2020). Deep Learning vs. Traditional Computer Vision. Dalam K. Arai & S. Kapoor (Ed.), *Advances in Computer Vision* (Vol. 943, hlm. 128–144). Springer International Publishing. https://doi.org/10.1007/978-3-030-17795-9_10

P Gupta, J S Kumare, U P Singh, & R K Singh. (2017). *Histogram Based Image Enhancement Techniques: A Survey*. Unpublished. https://doi.org/10.13140/RG.2.2.27062.11845

qqwweee. (2018). *Keras-yolo3*. github. https://github.com/qqwweee/keras-yolo3

UNIVERSITAS
GADJAH MADA
Peningkatan Performa Sistem Klasifikasi Citra Kendaraan dengan Metode Kombinasi Pengembangan ORB Dan LBP Berbasis Random Forest
Rifka Canalisa Rahayu, Dr. Danang Lelono, S.Si., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Rahman, S., Rahman, M. M., Abdullah-Al-Wadud, M., Al-Quaderi, G. D., & Shoyaib, M. (2016). An adaptive gamma correction for image enhancement. *EURASIP Journal on Image and Video Processing*, *2016*(1), 35. https://doi.org/10.1186/s13640-016-0138-1

Redmon, J., & Farhadi, A. (2018). *YOLOv3: An Incremental Improvement* (arXiv:1804.02767). arXiv. https://doi.org/10.48550/arXiv.1804.02767

Reza, A. M. (2004). Realization of the Contrast Limited Adaptive Histogram Equalization (CLAHE) for Real-Time Image Enhancement. *Journal of VLSI Signal Processing Systems for Signal, Image and Video Technology*, *38*(1), 35–44. https://doi.org/10.1023/B:VLSI.0000028532.53893.82

Rosten, E., & Drummond, T. (2006). Machine Learning for High-Speed Corner Detection. Dalam A. Leonardis, H. Bischof, & A. Pinz (Ed.), *Computer Vision – ECCV 2006* (Vol. 3951, hlm. 430–443). Springer Berlin Heidelberg. https://doi.org/10.1007/11744023_34

Rublee, E., Rabaud, V., Konolige, K., & Bradski, G. (2011). ORB: An efficient alternative to SIFT or SURF. *2011 International Conference on Computer Vision*, 2564–2571. https://doi.org/10.1109/ICCV.2011.6126544

S., A. P., Mary, L., & Koshy, B. I. (2023). Detection and classification of vehicles using audio visual cues. *Multimedia Tools and Applications*, *82*(28), 44087–44106. https://doi.org/10.1007/s11042-023-14868-2

Samsat Sleman. (t.t.). *Cek Nilai Jual Kendaraan Bermotor DIY*. Diambil 10 April 2026, dari https://samsatsleman.jogjaprov.go.id/cek/njkb

Sánchez, J., Monzón, N., & Salgado, A. (2018). An Analysis and Implementation of the Harris Corner Detector. *Image Processing On Line*, *8*, 305–328. https://doi.org/10.5201/ipol.2018.229

Sasmono, R. A., Iqbal Anggoro Agung, M., Nazaruddin, Y. Y., Abel Oktavianus, J., & Tjahjono, G. (2021). Object Matching in Autonomous Vehicle Perception System Using ORB Feature Matching with SVM Classifier. *2021 International Conference on Instrumentation, Control, and Automation (ICA)*, 150–155. https://doi.org/10.1109/ICA52848.2021.9625698

Sharifani, K., & Amini, M. (2023). *Machine Learning and Deep Learning: A Review of Methods and Applications*. *10*(07).

Sharma, S., Agrawal, S., & Munjal, M. (2022). Technical Assessment of Various Image Enhancement Techniques using Finger Vein for personal Authentication. *Journal of Information Technology Management*, *14*(Security and Resource Management challenges for Internet of Things). https://doi.org/10.22059/jitm.2022.86666

Sheykhmousa, M., Mahdianpari, M., Ghanbari, H., Mohammadimanesh, F., Ghamisi, P., & Homayouni, S. (2020). Support Vector Machine Versus Random Forest for Remote Sensing Image Classification: A Meta-Analysis and Systematic Review. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, *13*, 6308–6325. https://doi.org/10.1109/JSTARS.2020.3026724

Shivangi Mishra, Sanjeev Kumar Suman, & L.B. Roy. (2024). Automated road crack classification using a novel forest optimization algorithm for otsu thresholding and hybrid feature extraction. *International Journal of Advanced*

UNIVERSITAS
GADJAH MADA
Peningkatan Performa Sistem Klasifikasi Citra Kendaraan dengan Metode Kombinasi Pengembangan ORB Dan LBP Berbasis Random Forest
Rifka Canalisa Rahayu, Dr. Danang Lelono, S.Si., M.T.
Universitas Gadjah Mada, 2026 | Diunduh dari http://etd.repository.ugm.ac.id/

Technology and Engineering Exploration, *11*(111). https://doi.org/10.19101/IJATEE.2023.10102010

Soni, S., Singh, P., & Waoo, A. A. (2024). REVIEW OF GAMMA CORRECTION TECHNIQUES IN DIGITAL IMAGING. *ShodhKosh: Journal of Visual and Performing Arts*, *5*(5). https://doi.org/10.29121/shodhkosh.v5.i5.2024.1902

Sozzi, M., Cantalamessa, S., Cogato, A., Kayad, A., & Marinello, F. (2022). Automatic Bunch Detection in White Grape Varieties Using YOLOv3, YOLOv4, and YOLOv5 Deep Learning Algorithms. *Agronomy*, *12*(2), 319. https://doi.org/10.3390/agronomy12020319

U, P. K., M.P.V, S., & Murthy, B. T. V. (2017). Implementation of stereo visual odometry estimation for ground vehicles. *2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT)*, 1173–1177. https://doi.org/10.1109/RTEICT.2017.8256783

Wang, M., Sun, C., & Sowmya, A. (2022). Efficient corner detection based on corner enhancement filters. *Digital Signal Processing*, *122*, 103364. https://doi.org/10.1016/j.dsp.2021.103364

Woo, J., Baek, J.-H., Jo, S.-H., Kim, S. Y., & Jeong, J.-H. (2022). A Study on Object Detection Performance of YOLOv4 for Autonomous Driving of Tram. *Sensors*, *22*(22), 9026. https://doi.org/10.3390/s22229026

Xie, Y., Wang, Q., Chang, Y., & Zhang, X. (2022). Fast Target Recognition Based on Improved ORB Feature. *Applied Sciences*, *12*(2), 786. https://doi.org/10.3390/app12020786

Zhang, D., He, Z., Zhang, X., Wang, Z., Ge, W., Shi, T., & Lin, Y. (2023). Underwater image enhancement via multi-scale fusion and adaptive color-gamma correction in low-light conditions. *Engineering Applications of Artificial Intelligence*, *126*, 106972. https://doi.org/10.1016/j.engappai.2023.106972

Zhang, L., Xu, W., Shen, C., & Huang, Y. (2024). Vision-Based On-Road Nighttime Vehicle Detection and Tracking Using Improved HOG Features. *Sensors*, *24*(5), 1590. https://doi.org/10.3390/s24051590

Zhu, F., Li, H., Li, J., Zhu, B., & Lei, S. (2023). Unmanned aerial vehicle remote sensing image registration based on an improved oriented FAST and rotated BRIEF- random sample consensus algorithm. *Engineering Applications of Artificial Intelligence*, *126*, 106944. https://doi.org/10.1016/j.engappai.2023.106944