

REFERENCE

- Arthi, V., Murugeswari, R., & Nagaraj, P. (2022). Object Detection of Autonomous Vehicles under Adverse Weather Conditions. *2022 International Conference on Data Science, Agents and Artificial Intelligence, ICDSAAI 2022*. <https://doi.org/10.1109/ICDSAAI55433.2022.10028795>
- Bewley, A., Ge, Z., Ott, L., Ramos, F., & Upcroft, B. (2016). Simple online and realtime tracking. *Proceedings - International Conference on Image Processing, ICIP, 2016-August*, 3464–3468. <https://doi.org/10.1109/ICIP.2016.7533003>
- Botchkarev, A. (n.d.). *Performance Metrics (Error Measures) in Machine Learning Regression, Forecasting and Prognostics: Properties and Typology*.
- Buslaev, A., Iglovikov, V. I., Khvedchenya, E., Parinov, A., Druzhinin, M., & Kalinin, A. A. (2020). Albumentations: Fast and flexible image augmentations. *Information (Switzerland)*, 11(2). <https://doi.org/10.3390/INFO11020125>
- Chu, X., & Ilyas, I. F. (2016). Qualitative data cleaning. *Proceedings of the VLDB Endowment*, 9(13), 1605–1608. <https://doi.org/10.14778/3007263.3007320>
- Cubuk, E. D., Zoph, B., Mane, D., Vasudevan, V., & Le, Q. V. (2019). Autoaugment: Learning augmentation strategies from data. *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition, 2019-June*, 113–123. <https://doi.org/10.1109/CVPR.2019.00020>
- Dong, H., Wen, M., & Yang, Z. (2019). Vehicle Speed Estimation Based on 3D ConvNets and Non-Local Blocks. *Future Internet 2019, Vol. 11, Page 123, 11(6)*, 123. <https://doi.org/10.3390/FI11060123>
- Dubská, M., Sochor, J., & Herout, A. (n.d.). *Automatic Camera Calibration for Traffic Understanding*.
- Elkapelli, S. S., & Damahe, L. B. (2017). A review: Region of interest based image retrieval. *Proceedings of 2016 Online International Conference on Green Engineering and Technologies, IC-GET 2016*. <https://doi.org/10.1109/GET.2016.7916731>
- Hodson, T. O. (2022). Root-mean-square error (RMSE) or mean absolute error (MAE): when to use them or not. *Geoscientific Model Development*, 15(14), 5481–5487. <https://doi.org/10.5194/GMD-15-5481-2022>
- Iliencescu, A. M., Iovanovici, A., & Vladutiu, M. (2022). Supervised learning data preprocessing for short-term traffic flow prediction. *2022 IEEE 16th International Scientific Conference on Informatics, Informatics 2022 - Proceedings*, 132–136. <https://doi.org/10.1109/INFORMATICS57926.2022.10083399>
- Kabir, M. H., & Islam, M. S. (2024). Enhancing Traffic Flow and Reducing Congestion: A Smart City Approach with an IoT-based Intelligent Traffic Management System. *2024 International Conference on Innovations in Science, Engineering and Technology*:

- Konar, J., Khandelwal, P., & Tripathi, R. (2020). Comparison of Various Learning Rate Scheduling Techniques on Convolutional Neural Network. *2020 IEEE International Students' Conference on Electrical, Electronics and Computer Science, SCEECS 2020*. <https://doi.org/10.1109/SCEECS48394.2020.94>
- Kumar, A., Mukherjee, A., & Mandava, M. (2019). Estimation of speed and tracking of vehicles using radar duet. *I2MTC 2019 - 2019 IEEE International Instrumentation and Measurement Technology Conference, Proceedings, 2019-May*. <https://doi.org/10.1109/I2MTC.2019.8827059>
- Lin, C. J., Jeng, S. Y., & Lioa, H. W. (2021). A Real-Time Vehicle Counting, Speed Estimation, and Classification System Based on Virtual Detection Zone and YOLO. *Mathematical Problems in Engineering, 2021*. <https://doi.org/10.1155/2021/1577614>
- Lin, T. Y., Maire, M., Belongie, S., Hays, J., Perona, P., Ramanan, D., Dollár, P., & Zitnick, C. L. (2014). Microsoft COCO: Common Objects in Context. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics), 8693 LNCS(PART 5)*, 740–755. https://doi.org/10.1007/978-3-319-10602-1_48
- Liu, C., Huynh, D. Q., Sun, Y., Reynolds, M., & Atkinson, S. (2021). A Vision-Based Pipeline for Vehicle Counting, Speed Estimation, and Classification. *IEEE Transactions on Intelligent Transportation Systems, 22*(12), 7547–7560. <https://doi.org/10.1109/TITS.2020.3004066>
- Liu, H., & Li, T. (2016). Key frame extraction based on improved frame blocks features and second extraction. *2015 12th International Conference on Fuzzy Systems and Knowledge Discovery, FSKD 2015*, 1950–1955. <https://doi.org/10.1109/FSKD.2015.7382247>
- Luo, W., Xing, J., Milan, A., Zhang, X., Liu, W., & Kim, T. K. (2021). Multiple object tracking: A literature review. *Artificial Intelligence, 293*, 103448. <https://doi.org/10.1016/J.ARTINT.2020.103448>
- Luvizon, D. C., Nassu, B. T., & Minetto, R. (2016). A Video-Based System for Vehicle Speed Measurement in Urban Roadways. *IEEE Transactions on Intelligent Transportation Systems, 18*(6), 1–12. <https://doi.org/10.1109/TITS.2016.2606369>
- Mehta, S., & Singh, M. (2024). Revolutionizing Traffic Law Enforcement: IoT-Enabled Vehicle Control Systems for Smart Cities. *2024 IEEE International Conference on Intelligent Signal Processing and Effective Communication Technologies, INSPECT 2024*. <https://doi.org/10.1109/INSPECT63485.2024.10896210>
- Milan, A., Leal-Taixé, L., Taixé, T., Reid, I., Roth, S., & Schindler, K. (2016). *MOT16: A Benchmark for Multi-Object Tracking*. <https://miguel-mendez-ai.com/2024/08/25/mot-tracking-metrics>
- O'Shea, K., & Nash, R. (2015). An Introduction to Convolutional Neural Networks. *International Journal for Research in Applied Science and Engineering Technology, 10*(12), 943–947. <https://doi.org/10.22214/ijraset.2022.47789>



- Prakljacic, S., Grbic, R., Vranjes, M., & Herceg, M. (2024). Tool for image annotation in context of modern object detection. *2024 IEEE Zooming Innovation in Consumer Technologies Conference, ZINC 2024*, 48–53. <https://doi.org/10.1109/ZINC61849.2024.10579415>
- Redmon, J., Divvala, S., Girshick, R., & Farhadi, A. (2015). *You Only Look Once: Unified, Real-Time Object Detection*. <http://arxiv.org/abs/1506.02640>
- Roshan, V., & Stewart, J. H. M. (n.d.). *Optimal Ratio for Data Splitting*.
- Saha, S., & Rehena, Z. (2023). Profiling the Causes of Vehicle Accidents to Prevent its Occurrence. *Conference Proceedings - 2023 IEEE Silchar Subsection Conference, SILCON 2023*. <https://doi.org/10.1109/SILCON59133.2023.10405281>
- Sherin, K., Praneet Kumar, B., & Kumar R, P. (2023). Image Processing Based Speed Measurement and License Plate Detection of Vehicles. *Proceedings of the 2nd IEEE International Conference on Advances in Computing, Communication and Applied Informatics, ACCAI 2023*. <https://doi.org/10.1109/ACCAI58221.2023.10199888>
- Shorten, C., & Khoshgoftaar, T. M. (2019). A survey on Image Data Augmentation for Deep Learning. *Journal of Big Data*, 6(1). <https://doi.org/10.1186/S40537-019-0197-0>
- Sochor, J., Juránek, R., Špaňhel, J., Maršík, L., Široký, A., Herout, A., & Zemčík, P. (2017). *Comprehensive Data Set for Automatic Single Camera Visual Speed Measurement*. <https://doi.org/10.1109/TITS.2018.2825609>
- Timofejevs, J., Potapovs, A., & Gorobetz, M. (2022). Algorithms for Computer Vision Based Vehicle Speed Estimation Sensor. *2022 IEEE 63rd Annual International Scientific Conference on Power and Electrical Engineering of Riga Technical University, RTUCON 2022 - Proceedings*. <https://doi.org/10.1109/RTUCON56726.2022.9978802>
- Wang, A., Chen, H., Liu, L., Chen, K., Lin, Z., Han, J., & Ding, G. (2024). *YOLOv10: Real-Time End-to-End Object Detection*. <https://docs.ultralytics.com/models/yolov10>
- Wang, W., & Lu, Y. (2018). Analysis of the Mean Absolute Error (MAE) and the Root Mean Square Error (RMSE) in Assessing Rounding Model. *IOP Conference Series: Materials Science and Engineering*, 324(1). <https://doi.org/10.1088/1757-899X/324/1/012049>
- What Is a Convolutional Neural Network? | 3 things you need to know - MATLAB & Simulink*. (n.d.). Retrieved October 1, 2024, from <https://www.mathworks.com/discovery/convolutional-neural-network.html>
- Xu, M., Yoon, S., Fuentes, A., & Park, D. S. (2023). A Comprehensive Survey of Image Augmentation Techniques for Deep Learning. *Pattern Recognition*, 137, 109347. <https://doi.org/10.1016/J.PATCOG.2023.109347>
- Yohannes, E., Lin, C. Y., Shih, T. K., Thaipisutikul, T., Enkhbat, A., & Utaminingrum, F. (2023). An Improved Speed Estimation Using Deep Homography Transformation Regression Network on Monocular Videos. *IEEE Access*, 11, 5955–5965. <https://doi.org/10.1109/ACCESS.2023.3236512>



Zhang, J., Xiao, W., Coifman, B., & Mills, J. P. (2020). Vehicle Tracking and Speed Estimation from Roadside Lidar. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 13, 5597–5608. <https://doi.org/10.1109/JSTARS.2020.3024921>

Zhang, Y., Sun, P., Jiang, Y., Yu, D., Weng, F., Yuan, Z., Luo, P., Liu, W., & Wang, X. (2021). ByteTrack: Multi-Object Tracking by Associating Every Detection Box. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 13682 LNCS, 1–21. https://doi.org/10.1007/978-3-031-20047-2_1