

Vehicle Detection in Foggy Weather using Deep Learning.

Miss. Nimse Shweta¹, Miss. Phaphale Apeksha², Miss. Thorat Mayuri³, Miss. Walave Prajakta⁴
Prof. S. A. Thanekar⁵

Students, Department of Computer Engineering^{1,2,3,4}

Professor, Department of Computer Engineering⁴

Amrutvahini College of Engineering, Sangamner, Maharashtra, India

Abstract: Vehicle detection is the key to driverless technology. For safety, driverless technology requires extremely high accuracy and real-time for vehicle detection in different situations. Foggy weather can cause such problems as blurred image information and the loss of image details, which may pose great challenges to the vehicle detection based on images and videos. Deep learning-based object detection methods have achieved promising results on the conventional datasets. The existing methods either have difficulties in balancing the tasks of image enhancement and object detection, or often ignore the latent information beneficial for detection. In this project we are using YOLO based algorithm for vehicle detection in foggy weather conditions.

Keywords: Deep Learning, YOLOV3, Vehicle detection, Foggy weather

REFERENCES

- [1] Chollet, F., "Deep Learning with Python", 2021.
- [2] B. Wu, F. I. P. H. J. and K. Keutzer, "SqueezeDet: Unified, small, low power fully convolutional neural networks for real-time object detection for autonomous driving," in Proc. IEEE Conf. Comput. Vis. Pattern Recognit. Workshops (CVPRW), Jul. 2017, pp. 129–137.", 2025.
- [3] Wenyu Liu¹, R. Y. S. G. J. Z. L. Z., "Title: Image-Adaptive YOLO for Object Detection in Adverse Weather Conditions", 2022.
- [4] Ying Guo, Y.-k. C. X.-m. Z. Q. M., "A domain-adaptive method with cycle perceptual consistency adversarial networks for vehicle target detection in foggy weather", 2021.
- [5] Mahmoud Hassaballah, M. A. K., "DAWN: Vehicle Detection in Adverse Weather Nature", 2016.
- [6] Tsung-Yi, S. B. L. B. R. G., "Microsoft COCO: Common Objects in Context", 2025.
- [7] Gaofeng MENG, J. D. S. X. C. P., "A domain-adaptive method with cycle perceptual consistency adversarial networks for vehicle target detection in foggy weather". 2013 IEEE International Conference on Computer Vision, 2013.
- [8] Redmon, J. and Farhadi, A., "Yolov3: An incremental improvement," arXiv, 2018