

From the experiment, it is shown that it takes a considerable amount of time to detect the obstacle and divert but the difference is slight. The next experiment was designed by assuming one obstacle and two obstacles.

From the above graph, it is shown that there is almost no difference when there are one obstacle and two obstacles. Therefore, it brings us to the conclusion that the designed hypothesis works.

4 Conclusion

In this study, the unmanned logistics management system was implemented based on the simple yet efficient algorithm of detecting traffic lanes using the camera on a forklift using MFC and OpenCV while implementing a C++ server based on Visual Studio. As presented in the result, this proposed algorithm efficiently detected traffic lanes on a straight road and a gentle curve, and showed tenacity over exception processing such as recognition of logistics and processing thereof. Also, by setting up ROI and extracting a primary differentiation edge, the availability of real time processing was confirmed and the need for preventive measure on various error issues from unmanned operations arose.

References

1. Lee, B.M., Cha, E.Y.: Straight Lane Detection using Hough Transform, KOREA INFORMATION SCIENCE SOCIETY, Vol.28, No.1B, pp.565-567 (2001)
2. Kang, B.S., Lee, G.H.: Fire Alarm Solutions Through the Convergence of Image Processing Technology and M2M, Journal of the Korea Convergence Society, Vol.7, No.1, pp.37-42 (2016)
3. Kim, G.H., Chong, K.S., Youn, J.H.: Automatic Recognition of Direction Information
4. Choi, J. S. and Kang, J. M.: A study of effective method to update the database for road traffic facilities using digital image processing and pattern recognition, Journal of the Korean Society for Geospatial Information System, Vol. 20, No. 2, pp. 31-37 (2012)
5. Gonzalez, A., Bergasa, L. M., Yebes, J., Almazan, J.: Text recognition on traffic panels from street-level imagery, 2012 Intelligent Vehicles Symposium, 3-7 June, Alcalá de Henares, Spain, pp. 340-345. (2012)
6. Hu, Z.: Intelligent road sign inventory (IRSI) with image recognition and attribute computation from video log, Computer-Aided Civil and Infrastructure Engineering, Vol. 28, No. 2, pp. 130-145. (2013)
7. Huang, X., Liu, K., Zhu, L.: Auto scene text detection based on edge and color features, 2012 International Conference on Systems and Informatics, 19-20 May, Yantai, China, pp. 1882-1886. (2012)
8. Khan, J. F., Bhuiyan, S. M. A., Adhami, R. R.: Image segmentation and shape analysis for road-sign detection, IEEE Transaction on Intelligent Transportation Systems, Vol. 12, No. 1, pp. 83-96. (2011)
9. Lee, J. S., Yun, D. G.: The road traffic sign recognition and automatic positioning for road facility management, International Journal of Highway Engineering, Vol. 15, No. 1, pp. 151-161. (2013)