

Breaching Personal Bubble Detector Using YOLO V4 Image Processing Algorithm

Mr Abhishek Mohite¹, Mr Unmesh Sorate², Mr Himanshu Mishra³, Mr Ashish Shrivastava⁴,
Prof Sumit Mali⁵

Department of Computer Engineering, NBN SINHGAD School of Engineering, Pune, India^{1,2,3,4,5}

Abstract: This topic consists of a method detecting objects in video/pictures using YOLO v4 image processing algorithm. The Covid-19 has adversely affected different sectors in almost every country, which eventually caused a lot of problems for the people around the globe. Some small steps like wearing face mask as well as avoiding breaching of personal bubble would save lots of lives as the spread of this virus could be taped. YOLO stands for You Only Look Once algorithm is used for object tracking and object detection. We used YOLO algorithm for calculating breaching of personal bubble. Object tracking is used to track people in the frame for counting the objects and keeping a record of that object in the next frame. Minimum distance required for not breaching personal bubble is 6 feet. So, we keep this as a base for calculating distance, our model is trained and used for object detection and object tracking.

Keywords: Yolo Algorithm, Object Tracking, Image Processing, etc.

REFERENCES

- [1] S. Yadav, Deep learning based safe social distancing and face mask detection in public areas for covid-19 safety guidelines adherence.
- [2] F. Sener, N. Ikizler-Cinbis, Two-person interaction recognition via spatial multiple instances embedding, Journal of Visual Communication and Image Representation 32, 63 (2015).
- [3] W. Liu, D. Anguelov, D. Erhan, C. Szegedy, S. Reed, C.Y. Fu, A.C. Berg, in European conference on computer vision (Springer, 2016), pp. 21–37.
- [4] N. Singh Pun, S.K. Sonbhadra, S. Agarwal, Monitoring covid-19 social distancing with person detection and tracking via fine-tuned yolo v3 and deepsort techniques, arXiv pp. arXiv–2005 (2020).
- [5] D. Yang, E. Yurtsever, V. Renganathan, K.A. Redmill, U. Ozgüner, A vision-based social distancing and critical density detection system for covid-19, arXiv e-prints pp. arXiv–2007 (2020).
- [6] M. Bielecki, R. Züst, D. Siegrist, D. Meyerhofer, G.A.G. Cramer, Z.G. Stanga, A. Stettbacher, T.W. Buehrer, J.W. Deuel, Social distancing alters the clinical course of covid-19 in young adults: A comparative cohort study, Clinical Infectious Diseases (2020).
- [7] R.R. Nadikattu, S.M. Mohammad, P. Whig, Novel economical social distancing smart device for covid-19, International Journal of Electrical Engineering and Technology (IJEET) (2020).
- [8] A. Ghorai, S. Gawde, D. Kalbande, Digital solution for enforcing social distancing, Available at SSRN 3614898 (2020).
- [9] L. Ramadass, S. Arunachalam, Z. Sagayasree, applying deep learning algorithm to maintain social distance in public place through drone technology, International Journal of Pervasive Computing and Communications (2020).
- [10] T.C. Reluga, Game theory of social distancing in response to an epidemic, PLoS Comput Biol 6(5), e1000793 (2010).
- [11] Y. Feng, T. Marchal, T. Sperry, H. Yi, Influence of wind and relative humidity on the social distancing effectiveness to prevent covid-19 airborne transmission: A numerical study, Journal of aerosol science p. 105585 (2020).

