

Face Mask Detection

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Abstract: *The corona virus COVID-19 pandemic is causing a global health crisis so the effective protection methods is wearing a face mask in public areas according to the World Health Organization (WHO). The COVID-19 pandemic forced governments across the world to impose lockdowns to prevent virus transmissions. Reports indicate that wearing face masks while at work clearly reduces the risk of transmission. An efficient and economic approach of using AI to create a safe environment in a manufacturing setup. A hybrid model using deep and classical machine learning for face mask detection will be presented. A face mask detection dataset consists of with mask and without mask images, we are going to use OpenCV to do real-time face detection from a live stream via our webcam. We will use the dataset to build a COVID-19 facemask detector with computer vision using Python, OpenCV, and TensorFlow and Keras. Our goal is to identify whether the person on image/video stream is wearing a face mask or not with the help of computer vision and deep learning.*

Keywords: Deep Learning, Computer Vision, OpenCV, TensorFlow, Keras.

REFERENCES

- [1]. P. A. Rota, M. S. Oberste, S. S. Monroe, W. A. Nix, R. Campagnoli, J. P. Icenogle, S. Penaranda, B. Bankamp, K. Maher, M.-h. Chenet et al., "Characterization of a novel coronavirus associated with severe acute respiratory syndrome," *Science*, vol. 300, no. 5624, pp. 1394–1399, 2003.
- [2]. Z. A. Memish, A. I. Zumla, R. F. Al-Hakeem, A. A. Al-Rabeeh, and G. M. Stephens, "Family cluster of middle east respiratory syndrome coronavirus infections," *New England Journal of Medicine*, vol. 368, no. 26, pp. 2487–2494, 2013.
- [3]. Y. Liu, A. A. Gayle, A. Wilder-Smith, and J. Rocklöv, "The reproductive number of covid-19 is higher compared to sars coronavirus," *Journal of travel medicine*, 2020.
- [4]. Y. Fang, Y. Nie, and M. Penny, "Transmission dynamics of the covid-19 outbreak and effectiveness of government interventions: A data-driven analysis," *Journal of medical virology*, vol. 92, no. 6, pp. 645–659, 2020.
- [5]. N. H. Leung, D. K. Chu, E. Y. Shiu, K.-H. Chan, J. J. McDevitt, B. J. Hau, H.-L. Yen, Y. Li, D. K. M., J. Ip et al., "Respiratory virus shedding in exhaled breath and efficacy of face masks."
- [6]. S. Feng, C. Shen, N. Xia, W. Song, M. Fan, and B. J. Cowling, "Rational use of face masks in the covid-19 pandemic," *The Lancet Respiratory Medicine*, 2020.
- [7]. Z. Wang, G. Wang, B. Huang, Z. Xiong, Q. Hong, H. Wu, P. Yi, K. Jiang, N. Wang, Y. Pei et al., "Masked face recognition dataset and application," *arXiv preprint arXiv:2003.09093*, 2020. [10] Z.-Q. Zhao, P. Zheng, S.-t. Xu, and X. Wu, "Object detection with deep learning: A review," *IEEE transactions on neural networks and learning systems*, vol. 30, no. 11, pp. 3212–3232, 2019.
- [8]. A. Kumar, A. Kaur, and M. Kumar, "Face detection techniques: a review," *Artificial Intelligence Review*, vol. 52, no. 2, pp. 927–948, 2019. D.-H. Lee, K.-L. Chen, K.-H. Liou, C.-L. Liu, and J.-L. Liu, "Deep learning and control algorithms of direct perception for autonomous driving, 2019."