

Deep Learning based Sign Language Detection from Hand Gesture Dataset

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Abstract: *The idea of sign language detection by technology is underutilized, despite the fact that a sizable social group could benefit from it. Few technological advancements can help this social group connect to the rest of the world. One of the most crucial elements in enabling sign language users to interact with the rest of society is understanding sign language. This study suggests using powerful artificial intelligence technology known as convolutional neural networks to understand gestures in Indian sign language (CNN). Three alternative sample sizes, each with a different number of persons and viewing angles, are used in CNN training. The trained CNN is evaluated using the final two samples. Different CNN architectures were developed and tested using our selfie sign language to increase recognition accuracy. The proposed methodology's efficiency in detecting sign language is demonstrated by experimental data.*

Keywords: Hand Gesture

REFERENCES

- [1]. Das, S. Gawde, K. Suratwala, and D. Kalbande, "Sign language recognition using deep learning on custom processed static gesture images," in 2018 International Conference on Smart City and Emerging Technology (ICSCET). IEEE, 2018, pp. 1–6.
- [2]. U. Patel and A. G. Ambekar, "Moment based sign language recognition for indian languages," in 2017 International Conference on Computing, Communication, Control and Automation (ICCUBEA), 2017, pp. 1–6.
- [3]. G. A. Rao, K. Syamala, P. V. V. Kishore, and A. S. C. S. Sastry, "Deep convolutional neural networks for sign language recognition," in 2018 Conference on Signal Processing And Communication Engineering Systems (SPACES), 2018, pp. 194–197.
- [4]. D. Avola, M. Bernardi, L. Cinque, G. L. Foresti, and C. Massaroni, "Exploiting recurrent neural networks and leap motion controller for the recognition of sign language and semaphoric hand gestures," IEEE Transactions on Multimedia, vol. 21, no. 1, pp. 234–245, 2019.
- [5]. B. G. Lee and S. M. Lee, "Smart wearable hand device for sign language interpretation system with sensors fusion," IEEE Sensors Journal, vol. 18, no. 3, pp. 1224–1232, 2018.
- [6]. L. Lu, Y. Shin, Y. Su, and G. E. Karniadakis, "Dying relu and initialization: Theory and numerical examples," arXiv preprint arXiv:1903.06733, 2019.
- [7]. Z. Zhang and M. Sabuncu, "Generalized cross entropy loss for training deep neural networks with noisy labels," in Advances in neural information processing systems, 2018, pp. 8778–8788.
- [8]. S. Tammina, "Transfer learning using vgg-16 with deep convolutional neural network for classifying images," International Journal of Scientific and Research Publications (IJSRP), vol. 9, p. p9420, 10 2019.
- [9]. M. Shaha and M. Pawar, "Transfer learning for image classification," in 2018 Second International Conference on Electronics, Communication and Aerospace Technology (ICECA), 2018, pp. 656–660.
- [10]. A. G. Howard, M. Zhu, B. Chen, D. Kalenichenko, W. Wang, T. Weyand, M. Andreetto, and H. Adam, "Mobilenets: Efficient convolutional neural networks for mobile vision applications," CoRR, vol. abs/1704.04861, 2017. [Online]. Available: <http://arxiv.org/abs/1704.04861>