Recognition of Facial Emotion Using Deep Learning Model

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Abstract

Face emotion expressions considered as the identifiers of feelings that nonverbal way expressed that help to predict human feelings. Recognition of facial emotions process important in different domains like Education, Social Robot, Animation, Alert System etc. This research aims to improve the process recognition or classification of facial emotion. The datasets that used in this research are CK+, FER-2013 and KDEF. These datasets have different previous works on it to recognize the emotions in it. The target of this work is trying to improve classification or recognition of different emotions in these datasets comparison with the previous works results. The proposed methodology contains from 4 main phases started from collect datasets (CK+, FER- 2013 and KDEF). The second phase in our methodology is pre-processing dataset to change and unify size, color space and extension to 48*48, grey and PNG respectively. The CNN that used in third phase contains from 7-convolution layer with different filter size and number of filters for each layer. Each convolution layer followed by Relu and max polling layer. The final phase is evaluating the CNN for each dataset based on evaluation metrics. The results show our CNN model achieved 98.80% accuracy on CK+ dataset, 52.0% on FER-2013 and 96.80% on KDEF dataset. The Comparison of our work with previous work shows that our work success to improving accuracy in CK+ and KDEF datasets but fail in FER-2013 dataset.
Keywords: Facial Emotion Recognition, Convolutional Neural Network, Deep Learning