FACIAL EXPRESSION RECOGNITION USING ENSEMBLE LEARNING

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In non-verbal communication, emotion plays a vital role and humans show their emotion through facial expressions. FER has remained a challenging task in the field of Computer Vision since human expressions vary significantly. One more reason which makes FER more complicated is that emotion is a mixture of expressions. To overcome the drawbacks of existing approaches I am proposing FER using ensemble learning. The proposed model is a combination of five different independent networks to increase accuracy and avoid overfitting. Five different networks are Convolution Neural Network (CNN), Separable Convolution Neural Network (SCNN), Residual Neural Network (ResNet), Inverse ResNet, and Deep Belief Network (DBN).

All the networks are trained for 'FER2013' consisting of around 40K images and they are ensembled to form a single high accuracy FER model. Different datasets are used for testing and comparison of results. Different datasets used for validation and benchmarking are JAFFE, MMI, CK+, facesdb, and FERGDB-256. Multiple networks extract a different set of features from images. The ultimate goal of ensemble learning is to combine all the networks consisting of different extracted features in a certain pattern that helps to achieve higher accuracy.

References:

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