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SACSCE, 78

Facial Expression Recognition with Faster R-CNN

This method is an end-to-end facial expression recognition method which uses Faster R-CNN for detecting and classifying the facial expressions like angry, fear, happy, sad, disgust and surprise. Faster R-CNN is a region proposal algorithm which consists of Region Proposal Network (RPN) for proposing regions. The image is given as input to convolutional layers. VGG-16 is used as convnet. VGG-16 is a pretrained model with 16 layers. Its output is feature map and for a feature map of WxH size, kxWxH anchors are created for which k = 9 in Faster R-CNN. The feature map is given as input to RPN. While training, background classes (anchors whose IoU with ground truth objects < 0.8) are ignored. For assigning class labels to the object proposals, the feature map is cropped and RoI pooling is applied to get fixed length proposals. Then two fully connected layers are used for flattening and two fully connected layers for regression and classification. ~~The proposed met~~

Since Faster R-CNN is used, the Region of Interest of each image are marked first during labelling and a software is used to get bounding box coordinates and it is transferred into xml format. Training is performed with IoU threshold of 0.8.

Instead of Compared to traditional method, it locates the face region and recognize the expression directly.

For our project, bounding box coordinates are not needed. But VGG-16 convolution net will be used for feature extraction.