

ChaLearn LAP Real Versus Fake Expressed Emotion Challenge @ICCV 2017

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1 Team details

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2 Contribution details

- We combine the sequential texture and geometric feature for fake-vs-true emotion recognition
- Validation result: 0.70, Testing result: 0.60
- We use a temporal attention gated model to aggregate HOG features of a face image sequence. The model automatic learn the attention weights of each frame, and update the hidden states according to the attention gate. We also use a autoencoder LSTM to learn to encode the facial landmarks sequences into fixed length vector. The aggregated HOG and encoded landmark features are concatenated as final video representation. The whole model can be trained end-to-end.
- References
 1. W Pei, T Baltrušaitis, DMJ Tax, LP Morency, Temporal Attention-Gated Model for Robust Sequence Classification, CVPR 2016
 2. Baltrušaitis T, Robinson P, Morency L P. Openface: an open source facial behavior analysis toolkit[C]//Applications of Computer Vision (WACV), 2016 IEEE Winter Conference on. IEEE, 2016: 1-10.

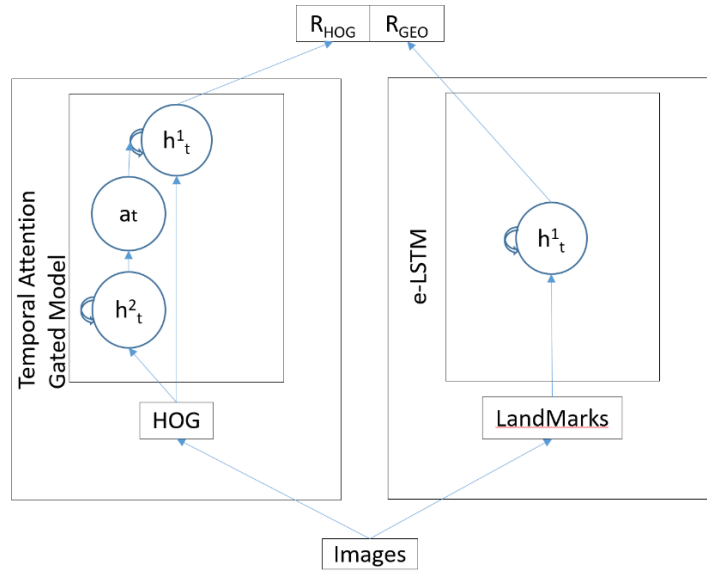


Figure 1: Proposed method

- Representative image / diagram of the method: See Fig.1
- Face detection and alignment is applied during preprocessing

3 Recognition of fake and true emotions

3.1 Features / Data representation

HOG feature and Facial Landmarks

3.2 Learning strategy

Unsupervised pre-training on training set

3.3 Other techniques

Data augmentation by cropping training data

4 Global Method Description

- Pre-trained face detection model and facial landmarks detection model from OpenFace library are used during preprocessing.

- No additional data has been used
- End-to-end model
- We introduced temporal attention model for this emotion recognition task to recognize the importance of each frame. We utilize facial geometric features by encoding different lengths sequence into same length vector. Combining facial texture and geometric feature, we gain robust testing result.

5 Other details

- Running Environment: Matlab, Python 2.7, running in Ubuntu 14.04 with GeForce GTX Titan GPU
- No compilation is needed, except for the install of OpenFace library
- Training/testing expended time? About 1 hour