

Give Me One Portrait Image, I Will Tell You Your Emotion and Personality

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Introduction

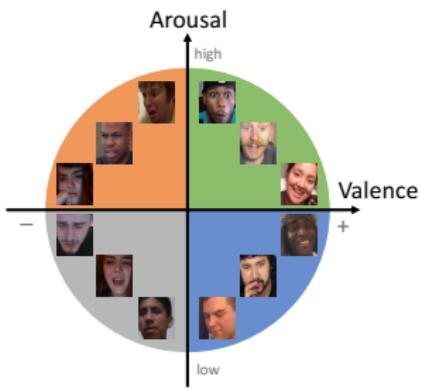


FIGURE – 2D Emotion

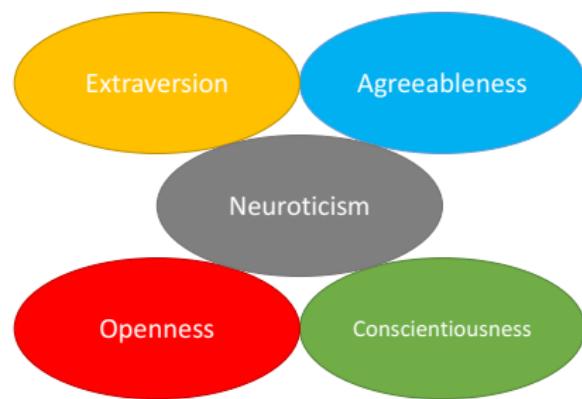
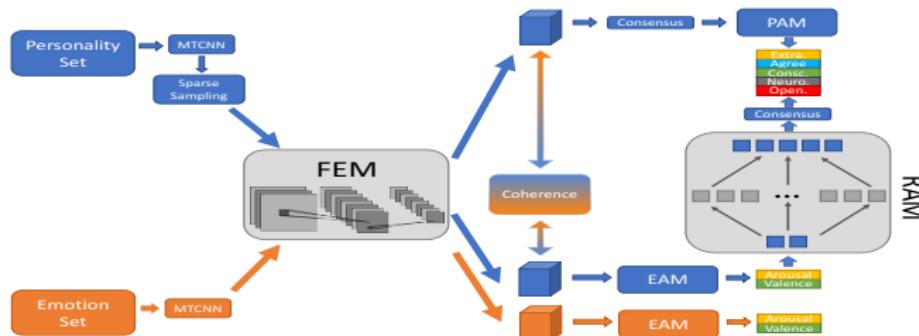


FIGURE – 5D Personality

We propose a system

- Predict your personality and emotion accurately from one image.
- Establish the relationship from emotion to personality directly.

Scientific details



An end-to-end jointly trainable deep network

- Faces are cropped and aligned with MTCNN in both datasets. Only 3 frames in a video from the personality set are sampled.
- Both streams share the same feature extraction module (FEM).
- Feature coherence is performed with an adversarial-like loss function, in order to reduce statistical distributions discrepancy between two datasets.
- The emotion-to-personality relationship is explored with a feed-forward network.

At test time with one image, emotion & personality traits are predicted. Personality can be furthered improved by emotion-to-personality relationship from RAM. See next slide

Results

Mean accuracy A

	Average	Extra.	Agree.	Consc.	Neuro.	Open.
NJU-LAMDA ¹	0.9130	0.9133	0.9126	0.9166	0.9100	0.9123
Ours (RAM)	0.9034	0.9106	0.9080	0.9024	0.9087	0.9070
Ours (PAM)	0.9161	0.9200	0.9132	0.9209	0.9127	0.9142
Ours (PAM+RAM)	0.9168	0.9203	0.9142	0.9205	0.9139	0.9149

R^2 score

	Average	Extra.	Agree.	Consc.	Neuro.	Open.
NJU-LAMDA	0.4548	0.4808	0.3381	0.5435	0.4745	0.4370
Ours (RAM)	0.3738	0.4486	0.2643	0.3494	0.4422	0.3643
Ours (PAM)	0.4781	0.5441	0.3378	0.5705	0.4894	0.4484
Ours (PAM+RAM)	0.4863	0.5535	0.3511	0.5660	0.5024	0.4584

1. NJU-LAMDA is the winner of ChaLearn Challenge on First Impressions in ECCV 2016 with the state-of-the-art results

Novelty

Existing work

- Treat emotion or personality prediction as individual tasks.
- Personality can only be predicted in video level.
- Never explore the relationship from emotion to personality.

Our work

- First work to investigate the feasibility of jointly analyzing the personality, emotion and emotion-to-personality relationship within a single deep neural network.
- Achieve state-of-the-art accuracy in personality estimation
- Provide a promising solution for automatically annotating frame-level humans' personality based on their emotions.

Prospective Demo



FIGURE – Prospective demo interface²

Two alternatives

- Frame-level personality and emotion attributes for **real-time WebCam stream** will be predicted while people are staying in front of the camera.
- Same frame-level attributes as before but for **optional video clips**, and the final video-level attributes (mean, most frequent...).

2. Video from OMG-Emotion Dataset <https://www2.informatik.uni-hamburg.de/wtm/OMG-EmotionChallenge/>