

Emotion Recognition with Region-Level Analysis

1 Supplementary Materials

More qualitative results of our methods are shown in Fig. 1. For each of the 26 discrete emotion categories, we use the validation set to set the threshold where precision equals recall. As we can see from the figure, our method can effectively infer the emotional states of the target person. Some results where misclassifications appear are also shown in the last two rows of Fig. 1.

We also show some example results of the body part attention (BPA) module in Fig. 2. In each row of the figure, the foreground body region of the target person is shown along with the heat maps of three top ranked channel features. The results demonstrate that our BPA module can help the network focus more on parts that are helpful for emotion recognition.

For body-object attention (BOA) module, we further evaluate the contribution of the use of geometry features. In ‘Ours without Geometry Features in BOA’, the geometry features are not used when calculating the weights for objects in the background scene. The results are shown in Table 1, which demonstrate the contribution of geometry features in the BOA module.

Category	Methods		
	Ours without BOA	Ours without Geometry Features in BOA	Ours
(1) Peace	27.59	28.21	29.54
(2) Affection	31.08	34.84	35.62
(3) Esteem	21.09	21.12	21.18
(4) Anticipation	58.99	60.11	60.74
(5) Engagement	85.62	85.93	86.84
(6) Confidence	80.28	81.54	82.03
(7) Happiness	57.29	62.35	62.93
(8) Pleasure	50.79	54.34	55.56
(9) Excitement	78.04	77.99	79.75
(10) Surprise	24.95	24.14	24.48
(11) Sympathy	13.24	13.81	14.02
(12) Confusion	33.67	34.72	35.30
(13) Disconnection	25.02	27.65	28.40
(14) Fatigue	12.80	14.37	15.10
(15) Embarrassment	4.22	4.72	4.83
(16) Yearning	10.69	12.66	13.01
(17) Disapproval	18.98	20.14	20.58
(18) Aversion	10.96	13.26	13.45
(19) Annoyance	21.66	21.83	22.31
(20) Anger	16.48	15.80	16.16
(21) Sensitivity	7.44	9.05	9.24
(22) Sadness	16.65	19.98	20.28
(23) Disquietment	19.19	21.23	21.71
(24) Fear	16.10	16.83	17.51
(25) Pain	11.28	13.55	14.04
(26) Suffering	12.34	17.18	18.51
Average	29.48	31.05	31.66

Table 1: Average precision of different methods for each emotion category. BOA is short for the body-object attention.

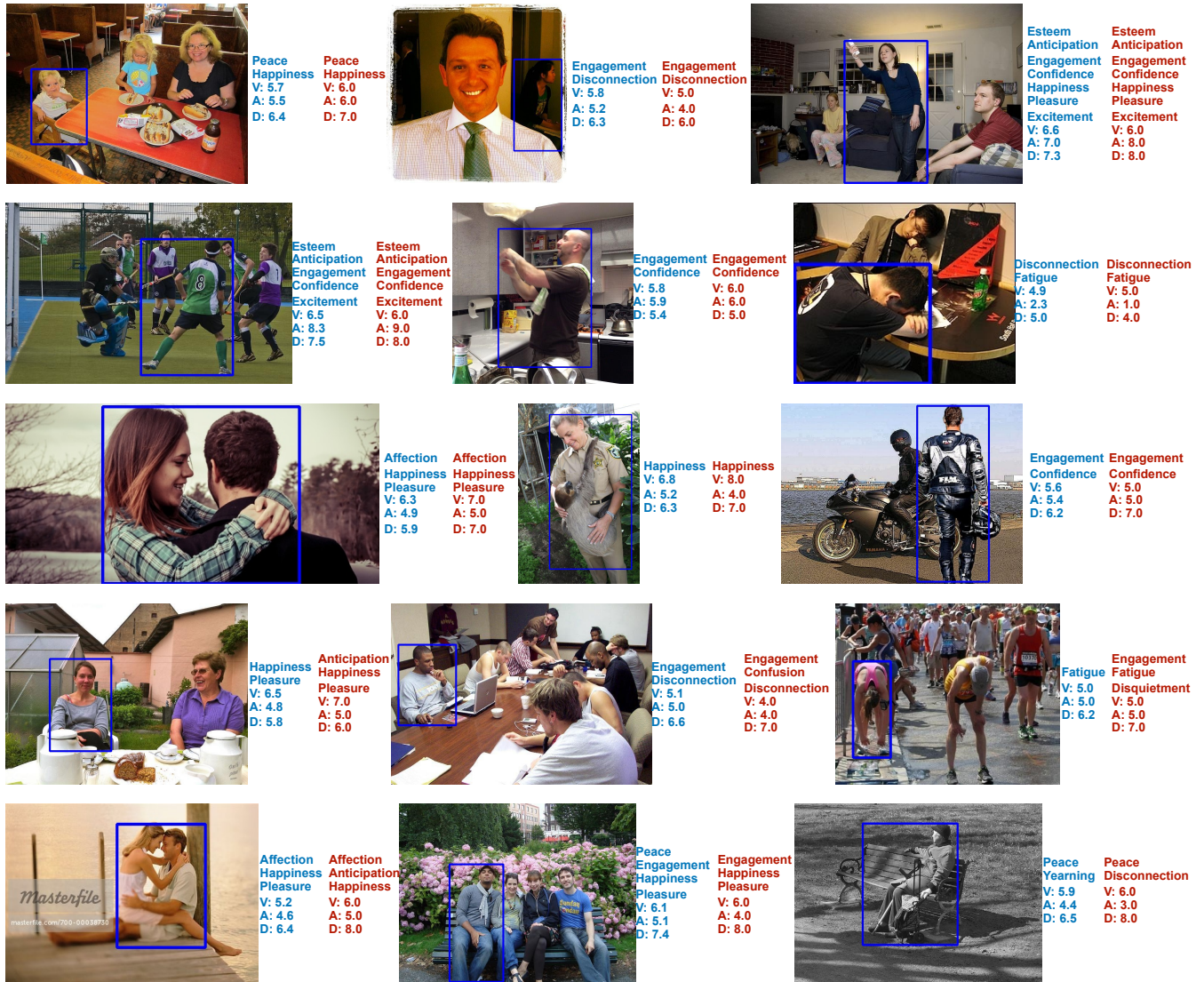


Figure 1: Qualitative results of our method. The emotion output (blue text), and the ground-truth emotion label (red text) are shown with the input image (where the target person is marked in blue).

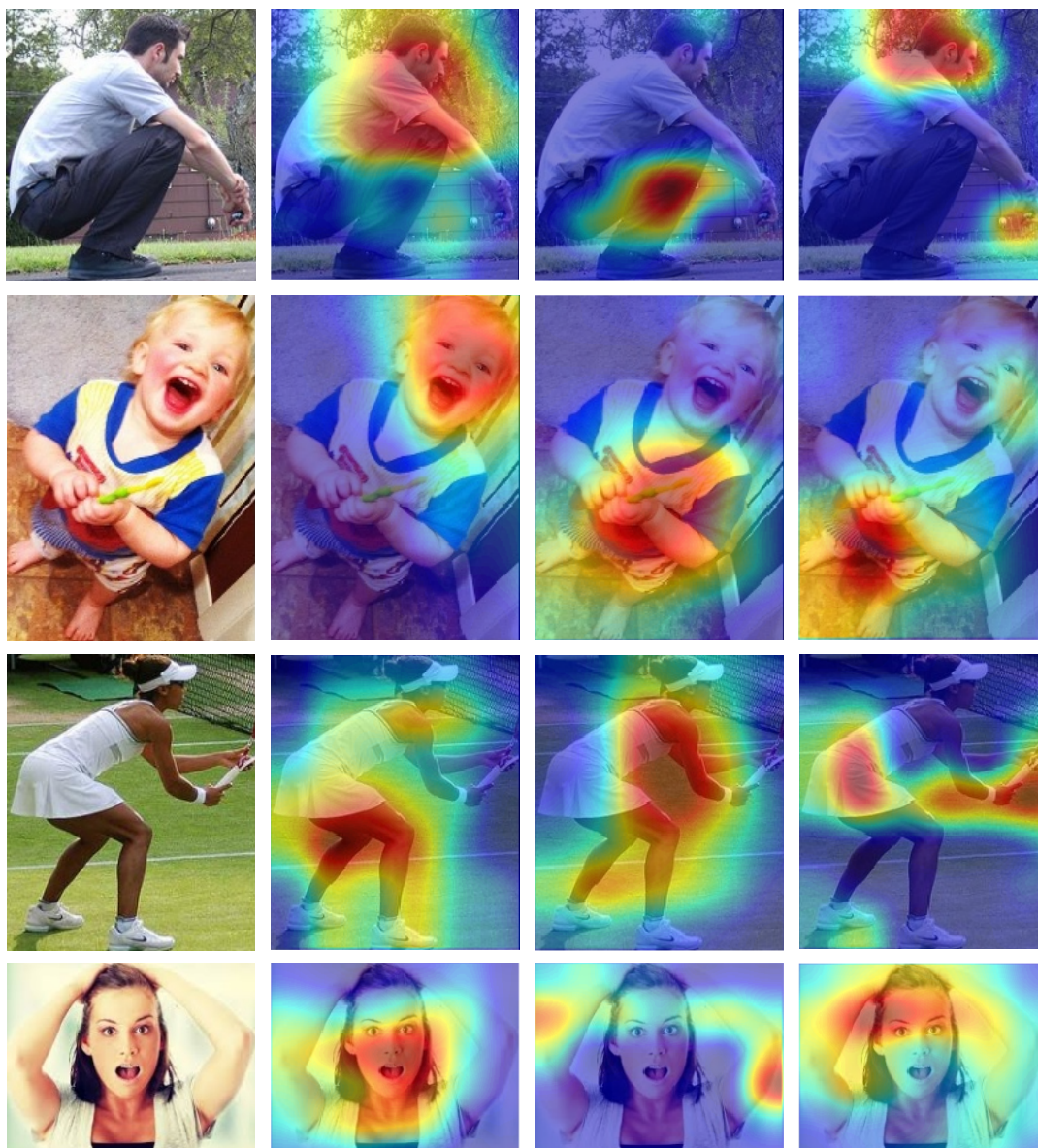


Figure 2: Example results of the body part attention operation. From left to right are the the foreground body region of the target person, and heat maps of three top ranked channel features.