



Sifat's website



IMPACT Lab

Evaluating Web-trained Facial Expression Recognition in Collaborative Problem-Solving (Archival)

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Code + References

CVPR
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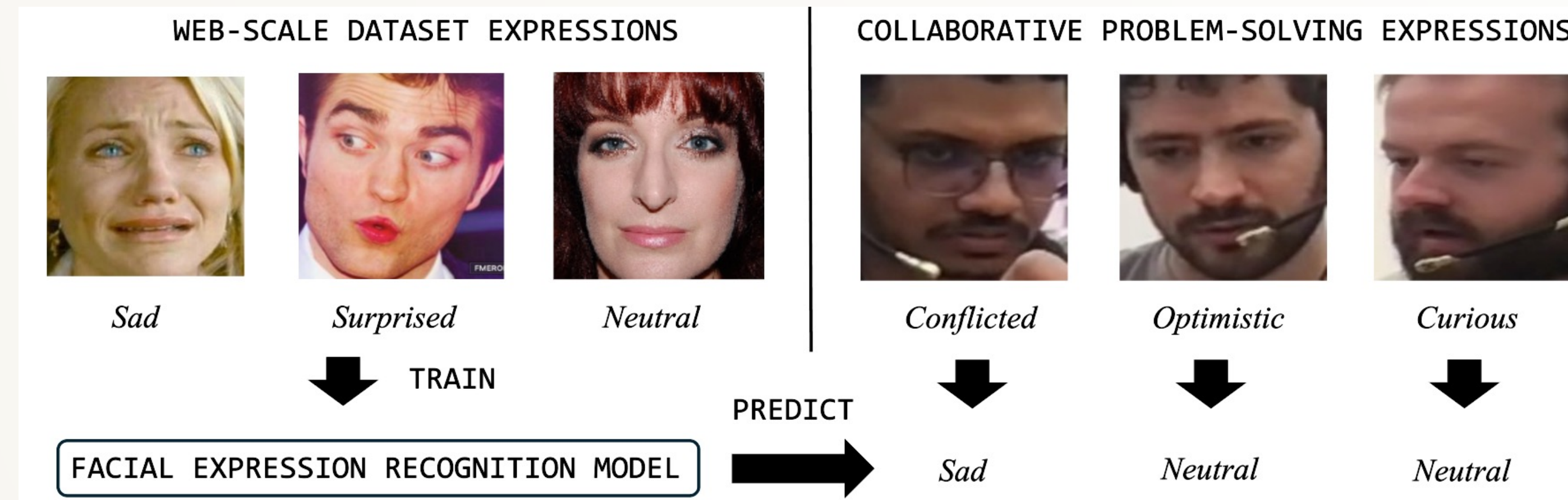


DENVER
COLORADO

Motivation

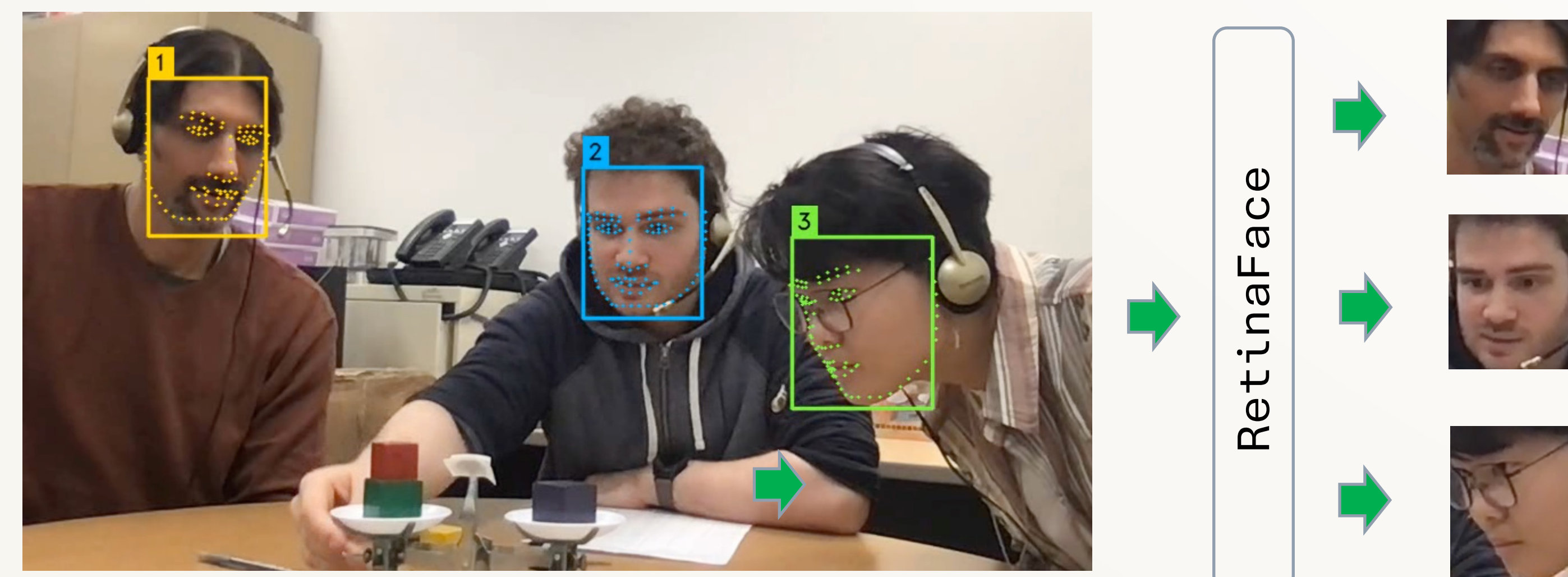
Facial Expression Recognition tools are widely used in education, but most are trained on basic emotions from web-scale facial expression datasets.

Our question: Do these models meaningfully align with learning-relevant emotions during collaboration?



Web-trained FER models learn from prototypical basic-emotion images, but collaborative learning emotions are often subtle and task-focused.

Dataset



27 students, 9 groups of 3, collaborative weights task, video-recorded problem solving, ~500k frames.

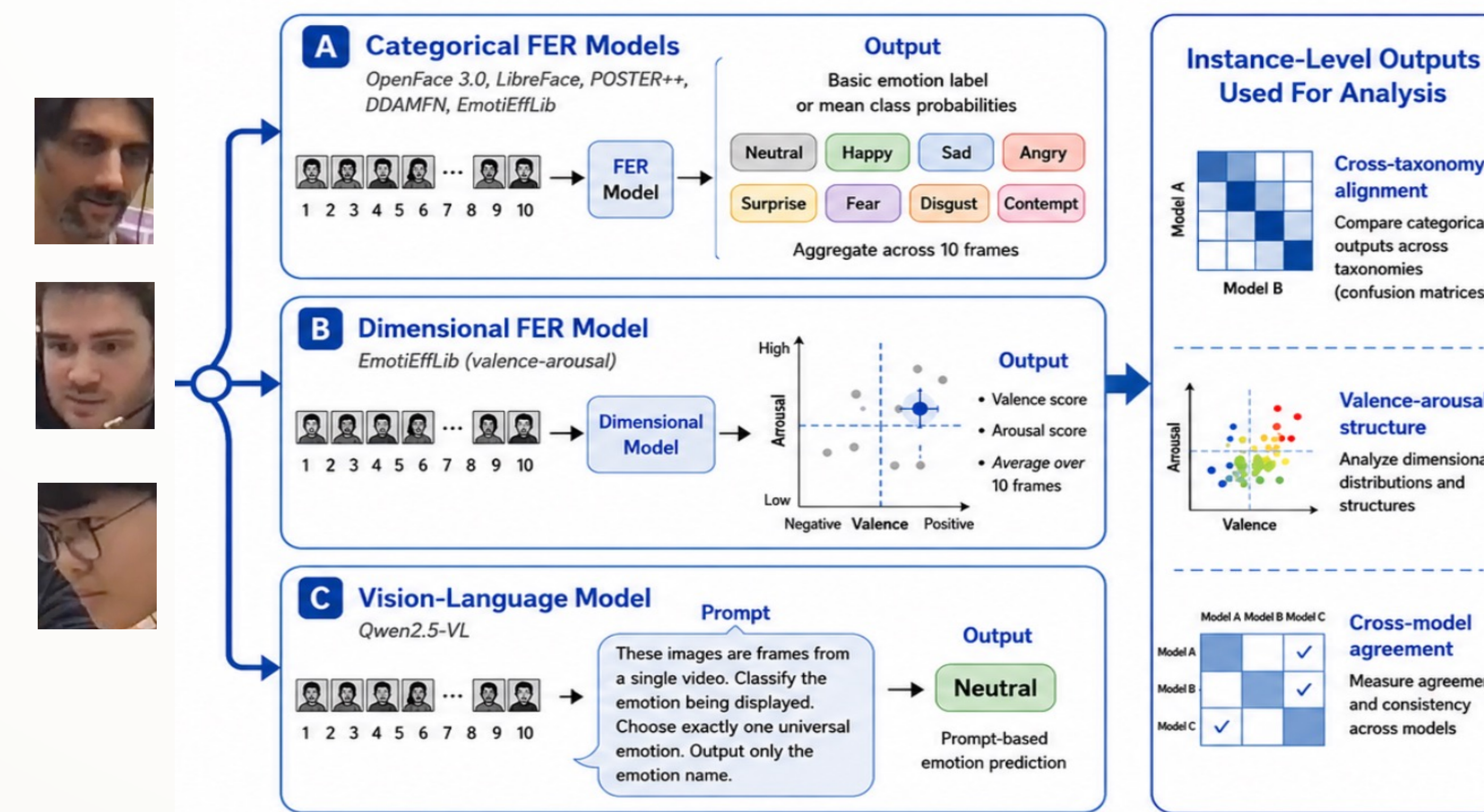
Participants reviewed their own videos and self-reported epistemic emotions: *Confused, Curious, Frustrated, Disengaged, Optimistic, Surprised, Conflicted*.

Experiments + Results

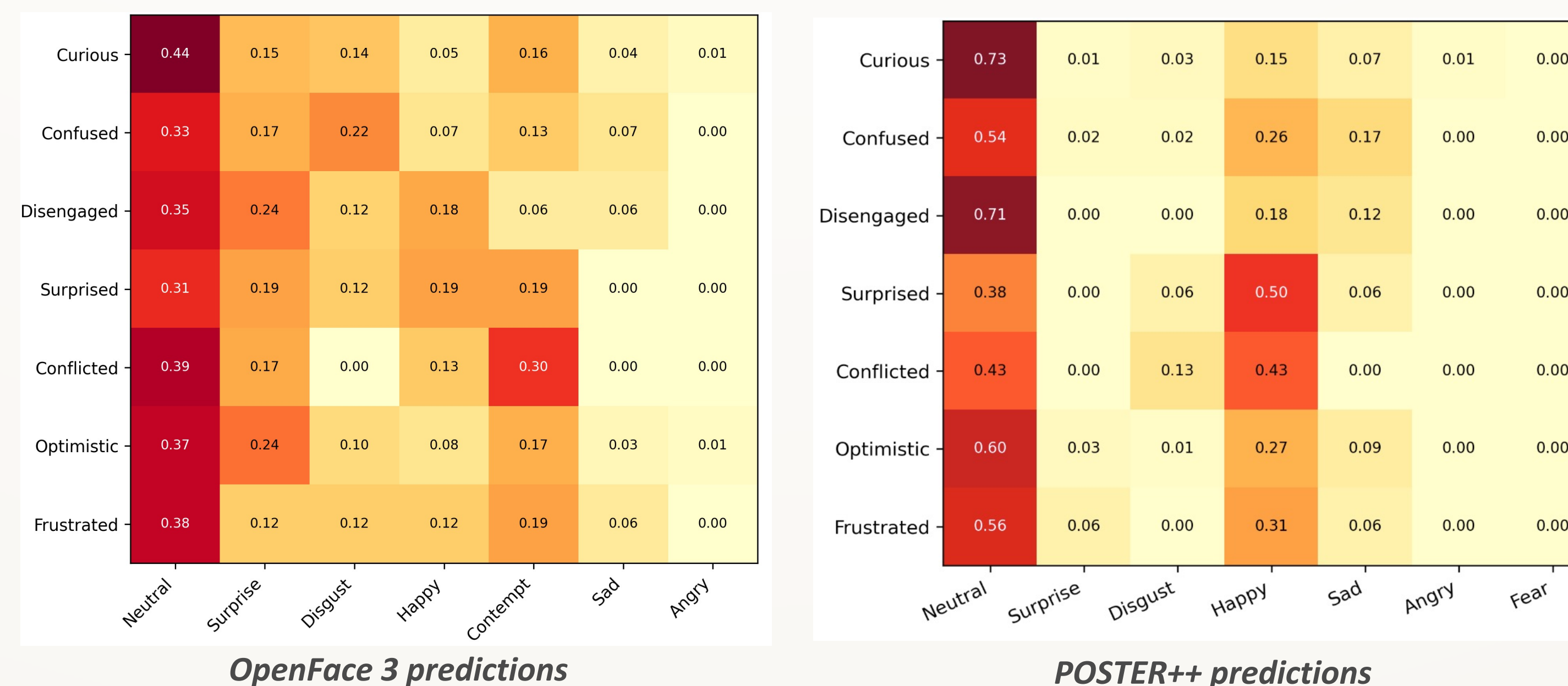
We evaluated pretrained facial expression models on face crops from the collaborative videos.

Models included:

OpenFace 3.0, LibreFace, POSTER++, DDAMFN, EmotiEffLib, Qwen2.5-VL

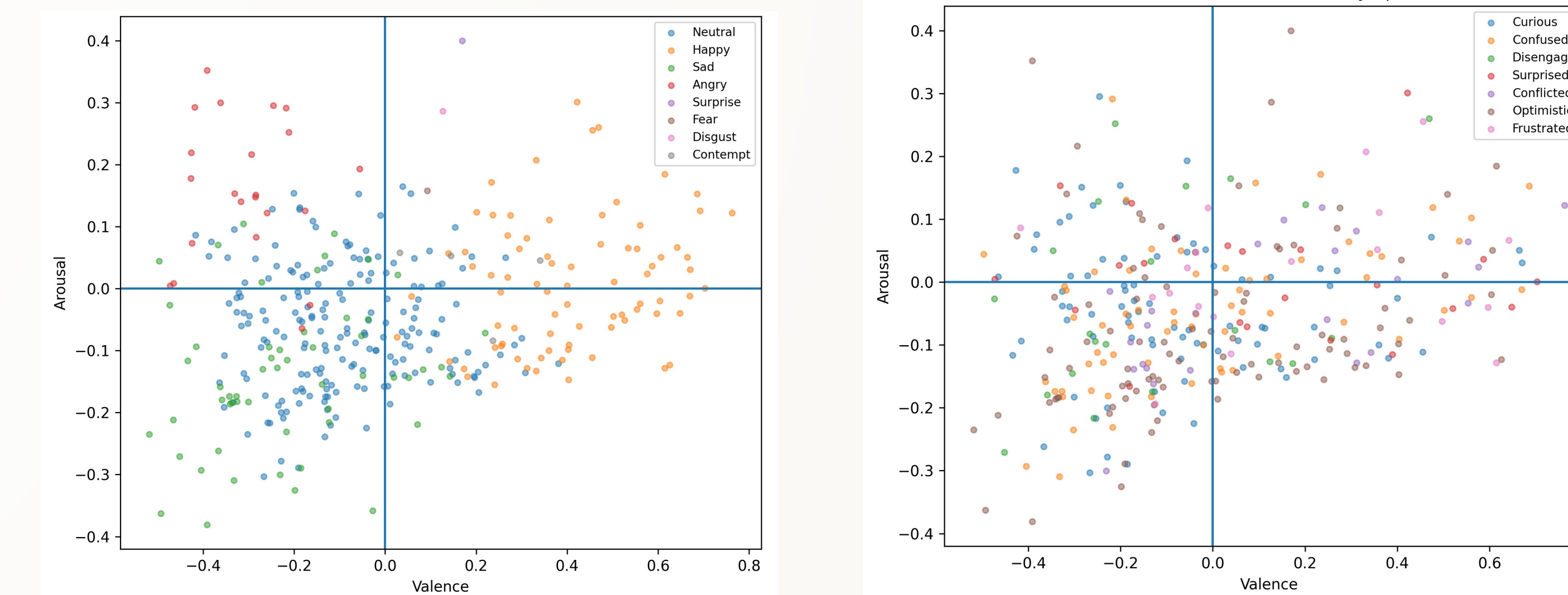


Across epistemic emotions, FER models most often predicts Neutral.

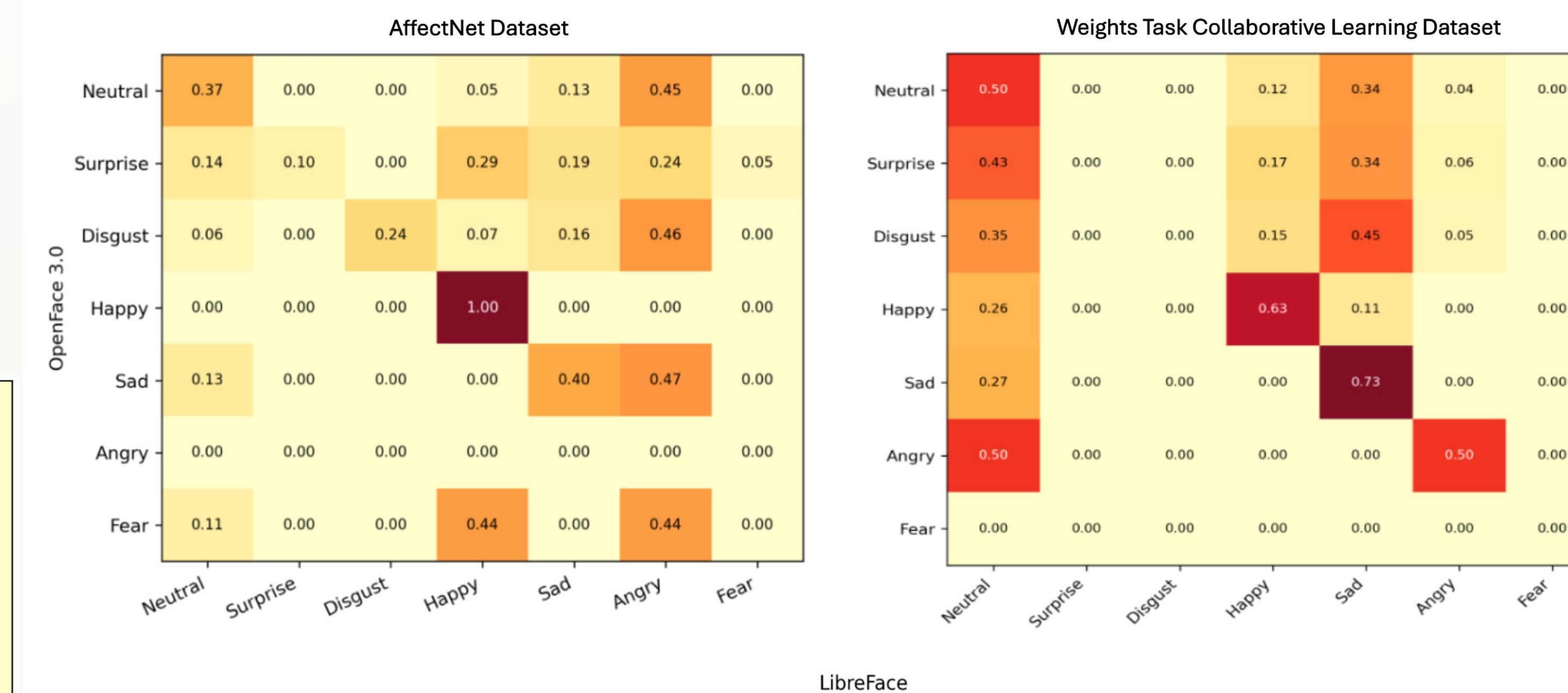


Experiments + Results (contd.)

Valence-arousal separates basic emotion predictions more clearly than epistemic emotion reports.



Cross-model agreement drops in collaborative learning data and concentrate in a few labels



Conclusion

FER models trained on web-scale basic emotions do not directly transfer to subtle epistemic emotions in collaborative learning. Hence, Web-trained FER systems should be used cautiously in collaborative learning research.