

# Dilated Context Integrated Network with Cross-Modal Consensus for Temporal Emotion Localization in Videos

## 1 OVERVIEW

In this supplementary material we present:

- The definitions of the proposed emotion categories (Section 2).
- The emotion category generation details on the MovieGraph dataset (Section 3).
- The detailed statistics of emotion labels (Section 4).

## 2 EMOTION CATEGORY DEFINITION

Following [2], we provide the definition of each emotion category in Table 1.

<b>1. Affection:</b> fond feeling; love; tenderness
<b>2. Anger:</b> intense displeasure or rage; furious; resentful
<b>3. Anticipation:</b> state of looking forward; hoping on or getting prepared for possible future events
<b>4. Aversion:</b> feeling disgust, dislike, repulsion; feeling hate
<b>5. Confidence:</b> feeling of being certain; conviction that an outcome will be favorable; encouraged; proud
<b>6. Disconnection:</b> feeling not interested in the main event of the surrounding; indifferent; bored; distracted
<b>7. Disquietment:</b> nervous; worried; upset; anxious; tense; pressured; alarmed
<b>8. Doubt:</b> difficulty to understand or decide; thinking about different options
<b>9. Embarrassment:</b> feeling ashamed or guilty
<b>10. Engagement:</b> paying attention to something; absorbed into something; curious; interested
<b>11. Esteem:</b> feeling of favorable opinion or judgment; respect; admiration; gratefulness
<b>12. Excitement:</b> feeling enthusiasm; stimulated; energetic
<b>13. Happiness:</b> feeling delighted; feeling enjoyment or amusement
<b>14. Sadness:</b> feeling unhappy, sorrow, disappointed, or discouraged
<b>15. Suffering:</b> psychological or emotional pain; distressed; anguished
<b>16. Surprise:</b> sudden discovery of something unexpected
<b>17. Sympathy:</b> state of sharing others emotions, goals or troubles; supportive; compassionate
<b>18. Peace:</b> well being and relaxed; no worry; having positive thoughts or sensations; satisfied

**Table 1: Proposed emotion categories with definitions.**

## 3 EMOTION CATEGORY GENERATION

We extract 239 available emotion labels from all clips on the MovieGraph dataset. To group them into the 18 emotion categories, we first use word connections (synonyms, relevance, affiliations) and the inter-dependence of a group of words (psychological research and affective computing) [1, 2] to form word-groupings. Then, we perform multiple iterations and cross-referencing with dictionaries and research in affective computing. Finally, we obtain the 18 emotion categories. As shown in Table 2, we list the groups of available emotion labels on the MovieGraph dataset for each emotion category.

Emotion Category	Grouped labels on MovieGraph dataset
1. Affection:	loving, friendly, affection, helpful, chatty
2. Anger:	anger, furious, resentful, outraged, vengeful, annoy, frustrated, irritated, agitated, bitter, insensitive, exasperated, displeased, annoyance, annoyed, angry
3. Anticipation:	optimistic, hopeful, imaginative, eager, jealous, determined, aggressive, desperate, focused, dedicated, diligent, anticipation, yearning
4. Aversion:	disgusted, horrified, hateful, disapproving, hostile, unfriendly, mean, disrespectful, mocking, condescending, cunning, manipulative, nasty, aversion, deceitful, sleazy, greedy, rebellious, petty, ironic, nauseous, impolite, rude, arrogant, bossy, malicious, vengeful, sneaky, dishonest, scornful, violent, scheming, sarcastic, conceited
5. Confidence:	confident, proud, stubborn, defiant, independent, convincing, persuasive, trusting, bold, brave
6. Disconnection:	indifferent, bored, distracted, distant, uninterested, self-centered, lonely, cynical, restrained, unimpressed, dismissive, tire, sleepy, drowsy, fatigue, tired, helpless, drunk, numb, sleeping, disconnection
7. Disquietment:	worried, nervous, tense, anxious, afraid, alarmed, suspicious, uncomfortable, hesitant, reluctant, insecure, stressed, unsatisfied, solemn, submissive, cowardly, disquietment, sick, scared, fearful, timid, terrified, dizzy
8. Doubt:	confused, skeptical, indecisive, doubt, unsure
9. Embarrassment:	embarrassed, ashamed, humiliated, embarrassment
10. Engagement:	curious, serious, intrigued, persistent, interested, attentive, fascinated, engagement, patient, careful
11. Esteem:	respectful, grateful, esteem, polite
12. Excitement:	excited, enthusiastic, energetic, playful, impatient, panicky, impulsive, hasty, excitement, crazy, passionate
13. Happiness:	cheerful, delighted, happy, amused, laughing, thrilled, smiling, pleased, overwhelmed, ecstatic, exuberant, happiness, funny, attracted, aroused, hedonistic, pleasant, flattered, entertaining, mesmerized, pleasure, overjoyed
14. Sadness:	sad, melancholy, upset, disappointed, discouraged, grumpy, crying, regretful, grief-stricken, depressed, heartbroken, remorseful, hopeless, pensive, miserable, apologetic, nostalgic, sadness
15. Suffering:	offended, hurt, insulted, ignorant, disturbed, abusive, offensive, pain, in pain, suffering
16. Surprise:	surprise, surprised, shocked, amazed, startled, astonished, speechless, disbelieving, incredulous
17. Sympathy:	kind, compassionate, supportive, sympathetic, encouraging, thoughtful, understanding, generous, concerned, dependable, sympathy, caring, forgiving, reassuring, gentle
18. Peace:	relieved, content, relaxed, calm, quiet, satisfied, peace, reserved, carefree

**Table 2: The groups of available emotion labels on the MovieGraph dataset for each emotion category.**

## 4 DETAILED STATISTICS OF EMOTION LABELS

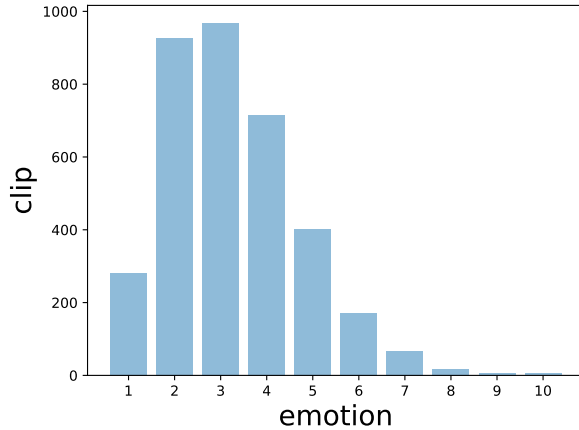
As shown in Table 3, we report the detailed statistics of emotions in our proposed training and testing splits. We also propose the number of emotions per clip in Figure 1 and Figure 2.

Emotion	training samples	testing samples	Avg emo durations
1. Affection	629	186	9.66s
2. Anger	867	194	10.26s
3. Anticipation	514	203	8.80s
4. Aversion	761	200	10.12s
5. Confidence	509	177	10.07
6. Disconnection	316	124	7.60s
7. Disquietment	1200	203	9.20s
8. Doubt	496	179	7.36s
9. Embarrassment	110	54	10.07s
10. Engagement	1008	202	10.38s
11. Esteem	353	131	8.89s
12. Excitement	551	175	9.19s
13. Happiness	1029	199	9.99s
14. Sadness	673	199	9.76s
15. Suffering	92	49	7.96s
16. Surprise	620	193	6.79s
17. Sympathy	517	163	10.06s
18. Peace	948	172	10.96s

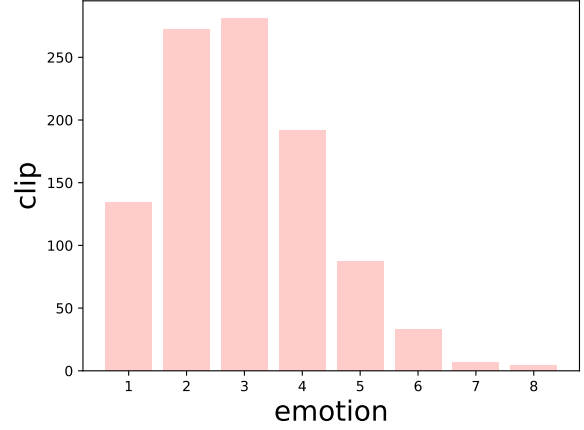
**Table 3: Statistics of emotions in our proposed training and testing splits.**

## 5 ADDITIONAL EXAMPLES

We show two examples for each emotion category in Figure ??, Figure ??, Figure ??, Figure ??, and Figure ??.



**Figure 1: The distribution of the number of emotions per clip, over all training movies.**



**Figure 2: The distribution of the number of emotions per clip, over all testing movies.**

## REFERENCES

- [1] Enrique García Fernández-Abascal, Beatriz García Rodríguez, María Pilar Jiménez Sánchez, María Dolores Martín Díaz, and Francisco Javier Domínguez Sánchez. 2010. *Psicología de la emoción*. Editorial Universitaria Ramón Areces.
- [2] Ronak Kosti, Jose M Alvarez, Adria Recasens, and Agata Lapedriza. 2017. EMOTIC: Emotions in Context dataset. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition Workshops*. 61–69.