Emotional Response to Multimedia Content Grand Challenge

Affective content analysis and emotional responses to multimedia stimuli are the core of an emerging, inter-disciplinary field coined “affective computing”. This research domain is attracting significant attention from various research communities ranging from computer vision to psychology. The detection, recognition and prediction of the emotions elicited by videos open up a variety of applications, from mood-based personalized content delivery to video indexing, summarization and search. Different, complementary approaches already exist to address such tasks. Some are based on the analysis of the audio-visual content itself while others focus on spectator’s response as analyzed through vision-based facial expression or biological signals.

Technicolor Grand Challenge aims at encouraging the cross-fertilization towards progress of affective computing and its technological applications. In particular, machine learning tools for affective modeling and recognition, signal processing of biological responses and user tests to understand those responses are expected to contribute to this effort.

The main objective is to have participants addressing some of the following questions: Can we predict the affective responses induced by a multimedia content? Can we even identify the type of induced emotion? How does this relate to user’s affect? Can we exploit emotion elicited by a video shot to infer other semantic concepts (i.e., scene category, genre of the movie, aesthetic perception, memorability)?

Accordingly, we encourage the participants to explore the following prototypical scenario:

> Given a movie with its rich audio-visual content (images, motion, sound track and dialogues), the system should output a normalized “emotional profile” of this movie in terms of arousal (positive-negative) and possibly valence (calm-intense). Typically, a graph depicting the level of emotion (i.e., activity or pleasantness) along the timeline maybe provided. Alternatively, a plot in the two-dimensional valence-arousal space could be provided on a per-scene basis. Proposed solutions could benefit from applying appropriate learning techniques to two referenced datasets.

Towards this goal, sample sets of video clips that are annotated in valence and arousal and that contain a wide range of scenes (action, indoor/outdoor, animation, persons close-ups) should be of great help. Not only, they would permit to devise and learn models to predict the emotion induced by a given movie scene, but they could also serve as test-beds to imagine novel emotion-based multimedia applications: video summarization and browsing, retrieval based on one or several audio-visual modalities, etc. Two such datasets already exist and are freely available (see below). In addition to those, organizers can provide on demand the “affective profile” of five full-length movies based on real spectators biological responses. More specifically, normalized amplitude of the affective reactions is extracted

from the GSR/EDA signals of each individual and averaged on a set of 20-40 viewers. These profiles could be used to cross-validate proposed solutions.

Datasets. We strongly encourage the participants to use the following open datasets:

1. ACCEDE - ”The Annotated Creative Commons Emotional DatabasE for affective video content analysis” (http://liris-accede.ec-lyon.fr/). This Liris-Technicolor dataset includes 9800 video clips extracted from 160 movies, annotated in terms of arousal and valence of the emotional response. This annotation was carried out by 1517 annotators from 89 different countries via crowdsourcing.
2. FilmStim (http://nemo.psp.ucl.ac.be/FilmStim/). This dataset includes 70 film excerpts from 1 to 7 minutes long, annotated by 364 participants according to 24 emotional classification criteria.

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