The Relation Between Author Mood and Affect to Sentiment in Text and Text Genre

Jussi Karlgren
Swedish Institute of Computer Science
Kista, Sweden
jussi@sics.se

Categories and Subject Descriptors

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1. ITEMS HAVE EMOTIONAL CONTENT AND LOADING

Items in our everyday environment have emotional loading and can achieve affective impact on people who use and encounter them. Items may have explicit and intended attitudinal messages, from the part of the creator – such as an opinionated text or an emotionally charged image – and they may have emotional impact beyond that intended by its creator. It is possible to decode emotive content using content analysis of various types, ranging from experiments on text to experiments on image and video. In recent years a surge of interest in sentiment analysis, attitude identification, and opinion mining in text has shown how much of that signal is explicitly identifiable and potentially useful: analysis of subjective aspects of written language and of emotive content of video or image is already an established field of sorts. e.g. [14, 12, 8]

For text, most experiments use technologies originally designed for topical analysis, such as keyword occurrence tabulation. It has been suggested that attitude in text is carried by dependencies among words, rather than by keywords, cue phrases, or high-frequency words. [1, 6] In addition, the distinction and interplay between text-level author attitude with respect to some topic and clause- or predication-level opinion visavi some facet of the text topic is being explored as an algorithmic problem. [15] But the implications of these distinctions have not been drawn out to their full extent. Is emotion a lexical feature, best represented as a partial component of word semantics, a predicative feature, best represented on clause level, or a discourse characteristic, best represented as an undertone of a text?

Question: *What is the appropriate level of text and language representation to detect attitude or opinion?*

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2. APPEAL IN INTERACTION WITH INFORMATION

Current information access systems are primarily based on a view of users engaged in some task for which they need topically relevant information. Arguably, this is the primary use to which computing systems have been put in human intellectual activities, but investigating non-topical factors in modelling information access behaviour is likely to be of greater and greater importance for the practical construction of future generations of interactive information systems. Not least, this demand will be driven by the advent of practical multimedia information systems for the general public. Access to multimedia information items in different from access to text in several respects, most notably in that much of it is less topically directed and less task-oriented than text often is, and this will help formulate future requirements for non-topically oriented access systems for access, including text. These must be sensitive to criteria that capture the use value of sessions and items even when they are less topical.

Of course, there are many reasons for the study of affect and appeal in interaction between human and computer, including, but not limited to the need to

- provide more sensitive interaction mechanisms and reduce the need for explicit and verbal feedback,
- provide sentiment-aware and socially aware computer-mediated human communication systems and personal information management systems
- enhance and carry dynamic and situationally appropriate narratives, e.g. in educational applications, in interactive narration, and in gaming, and
- provide a better and more complete understanding of human behaviour with respect to affect in general and in interaction with computational devices specifically.

Question: *What is the use case for studying emotion in interaction? What are we looking for and why?*

3. HUMAN EMOTION, MOOD, AFFECT, SENTIMENT, OPINION, AND APPEAL

The models used in sentiment and attitude analysis are often based on rather narrow scope annotation schemes with respect to coarse categories. Previous work on the loading of individual features and the affective reaction of human subjects to linguistic items on the level of words and terms

[11] or still images [10] quite often take "emotion labels" to be given, accepted, and comprehensible to test subjects as a basis for the study of correlation between emotions of various kinds [7].

The human sensations of emotion, sentiment, attitude, mood, and affect are studied in their own right. Traditionally, this has been done in the behavioural sciences [5]; but today also by information technologists, especially with respect to interaction design . "Emotion" , "sentiment" , "attitude" , "mood" , and "affect" are everyday words. No consensus beyond the general vernacular usage of the most common terms can currently be assumed, but mostly the usage tends to hold that affect or affective state is the more general term, emotion a momentary, mostly conscious sensation, and mood an affective frame over a longer time span, frequently not acknowledged to be conscious.

Two major approaches are used to model human affective states or emotions: categorial models where emotions are listed in a palette of salient and recognisable basic emotions as in the "Big 6" or "Big 18" list of emotions, based most notably on work by Paul Ekman [4] and dimensional representations where emotions are assessed along dimensions such as "Pleasure", "Arousal", and "Dominance", based on work by Albert Mehrabian. [9]

Categorial models are typically used in studies where the objective is to recognise one of a set of emotions for some purpose, or to test the efficiency of some analysis algorithm. However, most projects or studies which apply models of human emotion or affective state to some task or interaction in general use variants of dimensional models, and sometimes define a model specifically suited for application to information access [3, 2]. Mood in this context can be thought to be an underlying moderator of human action and a representation of background information used as a basis for assessment and judgment even without conscious attribution of an emotion towards a target notion. [13].

These aspects of human behaviour and information processing are studied in various ways with variously differing perspectives, but the assumptions of most researchers is that people are in continuously changing affective states of some sort; and that activities people engage in have emotional impact and that their decision making, behaviour, and performance are informed by the affective state of the user. This appears to be true even for very mundane tasks such as workplace tasks or accessing information items (especially in view of the observation given in the first section of this paper).

For the purposes of information access, given the observations given above, the confluence of these factors can provisionally be called *appeal*, to be used as a target notion for information access systems, much as relevance is operationalised to be the target notion of topical search engines.

Many projects and research efforts variously address different aspects of these various facets of affect, appeal and emotion. But comparatively few research projects link the study of affective state of the user both with an understanding of the activities they are pursuing and with the study of sentiment expressed in information. This is a crucial gap, essential to bridge for future research efforts.

Question: *What is the emotion, mood or attitude we are looking for and how does it relate to the information objects under study?*

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