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Research Paper Summary

Text-based emotion detection: Advances, challenges, and opportunities, *Engineering Report*, 2020

1. Problem definition and the main ideas of the research

As stated in this paper, emotion plays a vital role in language and decision making and has implications on how people connect with each other. Emotion is how people communicate their current state and well-being. Emotion detection (ED) is applied in business interactions to provide recommendations to the individual needs of consumers, as well as emotional retrieval from suicide notes, capturing emotions in multimedia tagging, detecting insulting sentences in conversations, and more. The purpose of this article is to perform a literature survey and comprehensive guide to the current state of emotion detection research, and to present major-related concepts, detection approaches, and emotion labeled data sources for ED in text. It describes the state of the art approaches, results, and limitations.

2. Significance of research study (Importance and Challenges of research problem)

This article notes that because ED is still in an infantile state of research in the field, and so knowledge of the appropriate techniques and the inadequacy of dictionaries available pose significant challenges. Thus, a literature survey covering the different methods and encouraging further research in the field is important. This is especially true in the current year, with vast amounts of user data available for detecting human emotion and the need for enhanced human computer interaction (HCI).

3. Main research questions and assumptions

This literature survey focuses on presenting the current state of text-based ED research, while presenting the intention, the assumptions, and the challenges faced with different approaches. The article overall seeks to present these approaches in ED research with the assumption that more novice researchers will be encouraged to conduct research to resolve the challenges posed.

4. Research Methodology

The article searches and describes approaches to text-based ED from 2015 to 2020. The article covers Discrete emotion models and Dimensional emotion models. Detection approaches such as rule construction, machine learning, hybrid, and more recent approaches in the current state of the art text based proposals section are presented in the paper. When covering these, the article describes the approach employed, the dataset used, major contributions, and the limitations. Also described are a number of ED datasets for use by researchers, along with descriptions of them.

5. Experiments

As a literature review, the article is focused on summarizing the methodologies of other researchers rather than performing its own experiments. However, the paper does present the need for a greater focus on emotion detection using texts by designing an algorithm to search the IEEE Xplore database and the Scorpus database for references to emotion detection and to emotion detection from texts. Shown in section 2.2, the algorithm plots graphs comparing the difference between references to these two search terms. The article explains that the paucity has mainly been because text may not portray peculiar cues to emotions, which makes the detection of emotion from text even more difficult than with other methods. Inadequate knowledge of effective text extraction methods presents a large hurdle in detecting emotions from written texts.

6. Discussion

6.1 Important aspects

- Covering datasets for use by researchers

Oftentimes in NLP research, the most basic need is to find a corpus/dataset that has the right specialty focus for your purposes. By performing a literature survey on datasets and describing their use cases, it can help make it easier for future researchers to search for appropriate datasets for their own research.

- Giving approach, dataset, context, and accuracy in a succinct manner

In section 3.2, Current state-of-the-art text-based proposals, short reviews are given for a number of different emotion detection approaches from 2015 to 2020. While abstract sections are helpful ways to summarize a paper and determine its relevance to you, abstracts usually will not cover the approach, context, and results in this manner. Oftentimes you will instead have to spend time going through the paper, looking for details on the approach and accuracy.

6.2 Limitations of the paper

- Pages of text with no section separation or visuals

In section 3.2, Current state-of-the-art text-based proposals, there are several pages of uninterrupted blocks of text. While the content is useful and tables are attached with summaries of these reviews, I think the paper could be improved with better organization and separation of these reviews.

6.3 Questions for presenter

- Based on what you've read about the current state of text based emotion detection in this article and what you've likely seen in the media about AI, do you think there is a gap

between how advanced the general public perceives AI to be and how advanced it really is?

- What future use case for ED that was mentioned in the article do you think that the field is closest to achieving at a practical level?