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Assignment 2 – Literature Review

In recent years we have seen a new way to express ourselves in online and mobile communication. As of 2015, emojis have become the world’s fastest growing language in all forms of communications – social media, text messaging and various messaging apps and even email (Emogi Research Team, 2015). A survey conducted by TalkTalk Mobile, a British mobile retailer, found that 72% of 18 to 25 year olds stated that emojis were easier to use to express their feelings than text (Doble, 2015). Knapp and Hall claimed that emojis serve as nonverbal conversational cues to “help to communicate ideas, manage interactions and disambiguate meaning to improve the efficiency of the conversation” (2010). Is there a general consensus or are there any opposing theories?

Originally created for use in Japanese mobiles in the late 1990s, support for emoji became available to major mobile operating systems iOs and Android in the US in 2011 (Grady, 2016). As of 2016, research had suggested that emojis have already taken over emoticons on social media most likely due to their flexibility in expressing not only facial expressions but food, religion, activities and even various cultures (Miller, Thebault-Spieker, Chang, Terveen and Hecht, 2016).

Prior to the widespread use of emojis, emoticons were widely used to express feelings, moods and emotions. An emoticon is shorthand for a facial expression – such as : - ) or : - ( . Emojis are emoticons on steroids – instead of using alphanumeric, punctuations and logic symbols (Walther and D’Addario, 2003), emojis are graphic symbols that represent facial expressions as well as concepts and ideas (Novak, Smailović, Sluban and Mozetič, 2015) such as Macintosh HD:Users:alexandraplassaras:Desktop:Screen Shot 2016-12-02 at 9.42.49 PM.pngandMacintosh HD:Users:alexandraplassaras:Desktop:Screen Shot 2016-12-02 at 9.42.57 PM.png. Prior to the introduction of emojis it was not possible to convey ‘wine glass’ or ‘Sweden’ using emoticons, now there exists 🍷and 🇸🇪. Now however, actions, religions, cultures, animals and plants can all be expressed using emojis. Given the prevalence of emoji in our daily communication, the focus of this research is to explore the sentiments that emojis attempt to convey using sentiment analysis of Twitter data and comparing the results with sentiment analysis of the Tweet’s text.

Much research has been done on text sentiment analysis ranging from subjectivity in sentiment analysis (Liu, 2010) to detecting sarcasm in sentiment analysis (Maynard and Greenwood, n.d.). As the focus of this study is on emoji sentiment analysis and how it compares to text sentiment analysis, the majority of this section will focus on previous research done concerning understanding emoji. Given that emojis were introduced to Americans in 2011 on a large scale when Apple, existing studies on emoji are quite limited. Additionally as Lu *et al.* mentions, it is harder to come across large data sets of emoji usage (2016).

The research uncovered so far includes a global analysis of emoji used on smartphones via the Kika Emoji keyboard, one of the most popular third party keyboards on Android smartphones (Lu, Ai, Liu, Li, Wang, Huang and Mei, 2016). This study looked at over 400 million emoji-contained messages from users in 212 different countries and showed that there is a significant? difference in emoji usage based on country and region. Another study looked at how people interpret different emojis as well as the same emojis on different platforms (Tigwell, Flatla, 2016). Subjects were surveyed from various countries including the US, the UK, Canada, Brazil and Germany and were recruited from social media. This study made the claim that people do in fact interpret emojis differently on an individual basis and not just from a cultural and country basis.

Previous work done by Novak *et al.* significantly affects the scope of this project because their study created the first known emoji sentiment lexicon, referred to as the Emoji Sentiment Ranking (2015). This study labeled over 1.6 million tweets in 13 different European languages (including English) and created a polarity measure for each emoji of the 4% of the tweets that contained emojis (roughly 64,000 tweets). What they found was that the majority of emojis were positive and that the sentiment of tweets with and without emojis varied greatly. The emoji lexicon created through this work will be used as the emoji lexicon of this study.

Previous research has not focused on comparing sentiment of text with emoji and has typically been focused on either text or emoji. Furthermore, the research on emoji has been conducted on either a small scale (under 30,000 instances) or using platform specific data from mobile carriers or specific applications. There have not been studies that have looked at sentiment analysis of emojis in Tweets. Thus, this paper hopes to add insights on the differences between text and emoji sentiment found in Tweets.

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