

# A Topic Based Approach to Correlate Emotional Intelligence and Happiness

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**Abstract**—Emotional Intelligence is the capability of individuals to recognize their own emotions and those of others, discern between different feelings and level them appropriately. In this study, we have examined the relation between trait emotional intelligence and happiness. We have identified the traits of high emotionally intelligent people and low emotionally intelligent people and the words used on social media platform to describe them. We have scraped twitter and extracted 400 tweets for each word. A Support Vector Machine(SVM) model was trained with large data sets that does sentiment analysis and classifies a given sentence into positive(happy) or negative(sad). The scraped tweets with trait EI words have been used to test the above model and hence were classified as happy or sad. Thus, a correlation between emotional intelligence and happiness was established.

**Index Terms**—Emotional Intelligence, Sentiment Analysis, SVM, Trait EI, Twitter, Word vectors.

## I. INTRODUCTION

Emotional intelligence(EI) can be defined as the ability to monitor one's own and other people's emotions, to discriminate between different emotions and label them appropriately, and to use emotional information to guide thinking and behavior.<sup>[1]</sup> Emotional intelligence also reflects abilities to join intelligence, empathy and emotions to enhance thought and understanding of interpersonal dynamics.<sup>[2]</sup> However, substantial disagreement exists regarding the definition of EI, with respect to both terminology and operationalizations.

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Different models of EI have led to the development of various instruments for the assessment of the construct. While some of these measures may overlap, most researchers agree that they tap different constructs.

Specific ability models address the ways in which emotions facilitate thought and understanding. For example, emotions may interact with thinking and allow people to be better decision makers (Lyubomirsky et al. 2005).<sup>[2]</sup> A person who is more responsive emotionally to crucial issues will attend to the more crucial aspects of his or her life.<sup>[2]</sup> Aspects of emotional facilitation factor is to also know how to include or exclude emotions from thought depending on context and situation.<sup>[2]</sup> This is also related to emotional reasoning and understanding in response to the people, environment and circumstances one encounters in his or her day-to-day life.<sup>[2]</sup>

Although happiness depends on situational factors, reflected in within-individual variations of affect, the fact that some individuals are consistently happier than others suggests dispositional causes underlying the pursuit and experience of happiness. Indeed, personality traits are arguably the most robust predictors of happiness.

Emotional intelligence is not just a management skill, but it is a necessary life skill for creating strong and committed interpersonal relationships, which leads to greater happiness.

## II. PAST LITERATURE

The most compelling evidence for the strong associations between personality traits and happiness derived from DeNeve and Cooper's meta-analysis<sup>[3]</sup>, which indicated that four of the so-called Big Five personality factors, namely emotional stability (ES), conscientiousness (C), extraversion (E), and agreeableness (A) – usually in that order – predispose individuals towards happiness. There is also wide consensus on the fact that ES and E, linked to temperamental differences in positive and negative affect, provide the biological basis of happiness, with A providing the social, and C the achievement, components of happiness.

In recent years, dispositional explanations of happiness have also emphasized the importance of emotional intelligence (EI), which, among other things, refers to the ability to identify and manage one's and others' emotions (Palmer et al., 2002; Salovey & Mayer, 1990). Unlike cognitive ability, EI is

most reliably assessed via self-report inventories, rather than objective performance tests. Therefore the label “trait EI” has been put forward to reflect its taxonomic position within the realm of personality.

### III. DATA COLLECTION

The traits of high emotionally intelligent and low emotionally intelligent people have been gathered from various resources. The qualities of high EI people that we have taken into consideration are as follows, 1) **Change agents** that means they are very adaptive, encourage change in environments and take advantage of the new resources. 2) They are **Self-Aware** which means they know what their strengths and weaknesses are, they choose their goals and tasks accordingly and make the best use of their qualities. 3) **Empathetic** that is they understand others feelings well, sensitive to them and are friendly people. 4) They are **balanced** people which means they are mature enough, and are well-versed in reacting to situations in a rational manner. 5) **Gracious** which means they carry themselves well and mingle with people (sociable people). 6) **Curious** which means they are enthusiastic to know new things happening around them, are eager to explore new stuff. 7) **Innovative** which means they bring original ideas to the table and always take the risk of trying them. 8) They are highly **focused** in anything they do. They put in their best efforts to achieve something. 9) They are **optimistic** people who spread positivity in the ambience and constantly encourage their peers irrespective of any problem and havoc. 10) They are **assertive** and bold people with firm determination and are decisive.

The qualities of low EI people taken into reference for this study are as follows, 1) They get **impatient** very often who jump to conclusions. 2) They are **frustrated** by most of the acts of their peers and lose their cool. 3) They **overreact** to situations instead of searching for the solution and are bad at facing them. 4) They **argue** on simple matters where it is not actually necessary, and could be solved in a peaceful manner. 5) They are **oblivious** to their surroundings and do not care to bother about others. 6) They are **pessimistic** towards life, and always hope the worst things to happen. 7) **Victimized** – they feel that they are the always exploited and deceived by others. 8) They are always in a state of **stress** and magnify things. 9) They are the **touch-me-nots** in a group, and do not take things sportively in life. 10) They are **egoistic** and selfish at times.

We have gathered the phrases and words that describe the above-mentioned traits as shown in table 1. Since we have used social media platform to collect the database, more informal words have been taken into consideration which are analogous to the above-mentioned qualities as depicted in table 2. We have used the hashtag based classification to search for the tweets because hashtag would specify one’s self emotions. We have used hashtag-based supervision to create our datasets, similar to tasks like emotion classification (Purver and Battersby, 2012)<sup>[3]</sup>. The tweets are downloaded

TABLE 1  
EITRAITS

HIGH/LOW EI	TRAIT	QUALITIES
HIGH	Change agents	Flexible, versatile, adjustable
HIGH	Self-aware	Conscious, alert, mindful, attentive
HIGH	Empathetic	Rapport, understanding, sensitive, gentle
HIGH	Balanced	Sensible, mature, rational
HIGH	Gracious	Sociable, elegant, polite
HIGH	Curious	Inquisitive, investigative wide-eyed
HIGH	Innovative	Inventive, experiment, original
HIGH	Focus	Concentration, mindful
HIGH	Optimistic	Positive, confident, hopeful
HIGH	Assertive	Bold, firm decisive
LOW	Impatient	Eager, jumpy, anxious
LOW	Frustrated	Annoyed, angry, crabby, irritation
LOW	Overreacting	Losing it, panic, chaotic
LOW	Argumentative	Battling, debate, falling out
LOW	Oblivious	Inattentive, absent, dreamy
LOW	Pessimistic	Negative, depressed, gloomy
LOW	Victimized	Con, deceived
LOW	Stressful	Tension, worry, strain
LOW	Oversensitive	Tense, moody, crybaby
LOW	Egoistic	Ego, selfish

using GOT(GetOldTwitter) Data library. We removed non-Unicode characters, and eliminated tweets that contain hyperlinks and also tweets that are shorter than 6 words in length. As a result, we have created a dataset of around 400 sentences per hashtag and around 24 hashtags are used to gather data. For example if we consider the trait of high EI people – change agents, the word change was searched as #change and 400 tweets with this hashtag were analyzed.

TABLE 2  
WORDS USED FOR SCRAPING

HIGH EI	LOW EI
#Bright future	#Angry
#Team up	#Irritated
#Change	#Clueless
#Sorry	#Dark_future
#Excited	#Deceived
#Thankful	#Sorry no sorry
#Hope	#Depressed
#Thoughtful	#Restless
#Happy	#Falling apart
#Innovation	#November rain
#I_can	#Hopeless
#I_will	#fml

#### IV. MODEL TRAINING

A word representation is a mathematical object associated with each word, often a vector. Each dimension's value corresponds to a feature and might even have a semantic or grammatical interpretation, so we call it a word feature.

Conventionally, supervised lexicalized Natural Language Processing(NLP) approaches take a word and convert it to a symbolic ID, which is then transformed into a feature vector using a one-hot representation: The feature vector has the same length as the size of the vocabulary, and only one dimension is on. However, the one-hot representation of a word suffers from data sparsity: Namely, for words that are rare in the labeled training data, their corresponding model parameters will be poorly estimated. Moreover, at test time, the model cannot handle words that do not appear in the labeled training data. These limitations of one-hot word representations have prompted researchers to investigate unsupervised methods for inducing word representations over large unlabeled corpora. One approach to inducing unsupervised word representation is to induce dense real-valued low-dimensional word embeddings using unsupervised approaches.

In most of the comparative studies it is found that SVM outperforms other traditional machine learning methods in sentiment classification. So we used a SVM model with sentences represented as vectors by using the word vectors trained on common crawl dataset using fasttext algorithm of FAIR which gave us around 2 million word vectors. The SVM classifier classifies a given sentence into positive or negative. This model scales the output between 0 and 1, if the output value is greater than 0.5, it is classified to be positive and if it is less than 0.5, it is classified to be negative. Positive symbolizes happy whereas negative is used to represent sad sentences.

#### V. MODEL TESTING

The above trained SVM model has been used to test for around 10000 scraped tweets. All the tweets containing words related to trait EI have been classified as positive(happy) or negative(sad) sentences. So, the tweets containing a specific word were analyzed and after the classification, if the number of positive tweets is way more than the number of negative tweets, that trait EI word has been used in a happy context whereas if it is the other way round, that trait EI word refers to sad context. If the number of positive and negative tweets is comparable, it is classified to be neutral that means that EI trait is found to be used in both happy and sad contexts.

#### VI. RESULTS

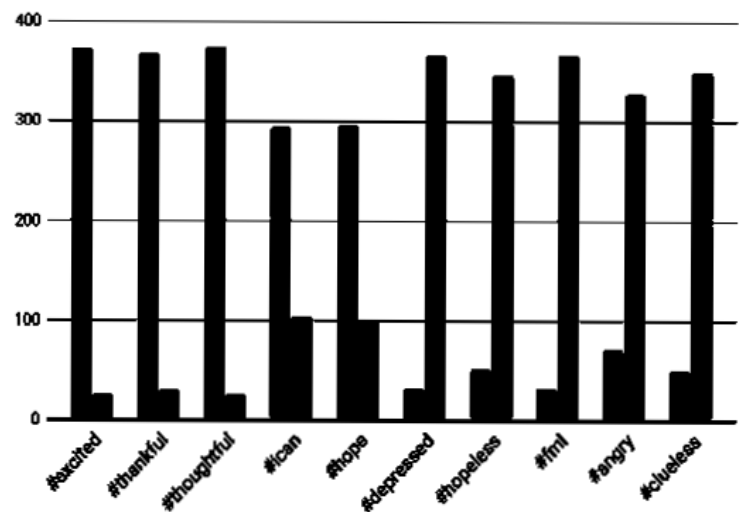
For each word in consideration, we have shown the number of tweets classified as positive and negative by the model in Table 3. For example, if we take the hash tag #excited, the

model classified 374 tweets as happy and 36 tweets as sad, which concludes that excited is a word used more in happy situations. A bar graph (figure 1) showing the same also has been depicted. Our model showed a training accuracy of 83.9% and validation accuracy of 79.33% .

TABLE 3  
RESULTS

HIGH/LOW EI	#word_used	POSITIVE - NEGATIVE - CLASSIFIED AS
HIGH	Innovation	299 – 101 – happy
HIGH	Happy	376 – 24 – happy
HIGH	Excited	374 – 26 – happy
HIGH	Thankful	369 – 31 – happy
HIGH	Change	176 – 224 – sad
HIGH	I_can	295 – 105 – happy
HIGH	Thoughtful	375 – 25 – happy
HIGH	Team up	356 – 44 – happy
HIGH	I_will	333 – 67 – happy
HIGH	Sorry	42 – 358 – sad
HIGH	Hope	297 – 99 – happy
HIGH	Bright future	331 – 69 – happy
LOW	Depressed	33 – 367 – sad
LOW	Hopeless	52 – 348 – sad
LOW	Fml	33 – 367 – sad
LOW	angry	72 – 328 – sad
LOW	clueless	50 – 350 – sad
LOW	sorry no sorry	198 – 202 – sad
LOW	restless	69 – 331 – sad
LOW	irritated	46 – 354 – sad
LOW	falling apart	146 – 254 – sad
LOW	deceived	63 – 337 – sad
LOW	dark future	182 – 217 – sad

FIGURE 1: A BAR GRAPH DEPICTING THE NUMBER OF TWEETS CLASSIFIED AS HAPPY AND SAD BY THE MODEL. FOR A PARTICULAR WORD, THE FIRST PEAK SHOWS THE NUMBER OF POSITIVE TWEETS AND THE SECOND PEAK SHOWS THE NUMBER OF NEGATIVE TWEETS



## VII. CONCLUSION

This project was quite an experimental one, which aims to show that it is actually possible to quantify emotional intelligence properties and relate it with happiness of the tweet. It can be concluded that generally tweets involving high EI words were posted in a happy sense and tweets having low EI words were posted in a unhappy sense. Twitter was chosen because it is the second largest social networking platform, 42% of people on twitter is youth and 70 % of those post on a regular basis. Limited character leads to high quality scraping data. Better accuracy of the model can be obtained by training it with more data. The vocabulary present in word vector is not sufficient to cover all the types of words. The model can be improved using Long Short-Term Memory(LSTM) instead of SVM. Aspect based sentiment analysis is another option. The study assumes that people portray their true self on social media which actually might not be true.

Thus the correlation between EI and Happiness can be established, High EI implying more happiness and vice versa.

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