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## SENTIMENT ANALYSIS WITH INSTAGRAM DATA

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**Abstract:** In the study, the comparison of two smart phone brands was made by using emoji classification. In the first part of the study, the relevant instagram pages were reached and the comments of the first posts were put into practice with Selenium. Here, the main aim is to extract data without using additional libraries and user logins. Thus, proper waiting times are added for loading the page. In the second part of the study, the collected emojis were classified as positive, negative and neutral, and the results were illustrated with a pie chart.

**Key words:** Instagram, Emotion analysis, Data.

### 1. INTRODUCTION

In order to take both the products and the brand a step forward, it is very important to know what customers think about you and your products. In this way, the products can be developed or customers' expectations can be better understood. With Instagram posts, customers' opinions about work or studies can be easily obtained. Instagram released on october 5, 2010 as a free application for IOS by Kevin Systrom and Mike Krieger.

The reason why the app is so popular is that it makes the photos taken more beatiful with its 11 photo filters. In addition, users have the opportunity to instantly, practically and quickly share the photos they share on Instagram on other social networks (Facebook, Twitter, Flickr ve Tumblr). All this made the app popular in a short time. Instagram, which was used and recommended by large masses in a short time, soon reached 1 million user dams.

Instagram, announced the tag (#) system in 2011. Thus, users were able to interact not only with their friends, but also with all users sharing with the same tag.

2011 has been a fruitful year for Instagram because it announced with an official statement made before the year ends that it reached 15 million members and 400 million photos sharing [1-2].

Internet and e-mail usage began to spread in Japan in 1990s. However, Shigetaka Kurita noticed a problem with email and internet communication, which brought huge changes in communication and changed communication actors. In traditional Japanese written communication, long and abstract expressions took a great place in the letters used instead of e-mails. For Japanese people, expressing their feelings across, describing abstract situations with long narratives were the basis of traditional Japanese correspondence. As the communication on the internet became widespread in the country, letters that people talked about emotions and abstract situations were replaced by e-mails that could be evaluated as short and brief. These short e-mails, where emotions were not explained, had a negative effect on the Japanese.

Kurita, who wanted to find a solution to this situation, developed a set of symbols representing emotions and other abstract ideas based on symbols used in street signs, Chinese characters and manga comics. Kurita, known as the father of emojis, could not have predicted that the symbols he found would be used all over the world. Nowadays, emojis, which are seen as a part of American communication culture, actually started to take their place in global communication after Apple's update in 2011 [3-4].

## **2. SENTIMENT ANALYSIS**

Sentiment analysis or opinion mining is an active field of study in the field of natural language processing that analyzes people's thoughts, feelings, assessments, attitudes, and emotions through the affordable treatment of subjectivity in the text [5].

Sentiment analysis is simply the process of working (statistically) on a piece of text whether it is positive, negative or neutral. Most of the Sentiment analysis approaches take one of two forms: polarity-based, where text fragments are classified as positive or negative, or classified as valence-based, in which the density of valence is considered. For example, the words "good" and "perfect" will be treated in the same way in an approach based on polarity; "perfect" will be evaluated more positively than "good" in a valence-based approach [6-7].

Today, businesses are heavily dependent on data. However, most of this data is unstructured text from sources such as emails, chats, social media, surveys, articles and documents. Micro blog content from Twitter and Facebook poses serious difficulties not only because of the amount of data it contains, but also from the type of language used to express emotions, namely short forms, emojis and expressions [5].

### 3. DESIGN OF THE PROJECT

To take the products and the brand a step forward, it is very important to know what customers think about you and your products. Thus, the products can be developed or customers' expectations can be better understood. With Instagram posts, customers' opinions about the work or studies can be easily collected.

VADER, means Valence Aware Dictionary and Sentiment Reasoner. It is a Sentiment analysis library based on Lexicon and rules. Library is popular in Sentiment analytics [7]. VADER is a simple rule-based Sentiment analyzer. It consists of a list of lexical features and related Sentiment criteria. Based on the grammatical and syntactic use of language, several rules have been created that are used to determine the Sentiment of the text. The dictionary is basically a list of words that are assigned semantic-oriented values as positive values or negative values to each word. In the VADER dictionary list, values from -4 to +4 are assigned, where -4 is extremely negative and +4 is extremely positive [8-9]. VADER performs very well with emojis, slangs and abbreviations in sentences [5].

In the first part, comments were taken from the brand-1 and brand-2 instagram accounts by Selenium. Selenium is a portable framework and a test automation tool.

The screenshot shows the comments section for a post from 'Brand-1'. There are four visible comments:

- naweedk @mrssippybali ??** 6g 1 beğenme Yanıtla
- \_a.yush\_ Please @ Brand-1** change your emojis to stock Android ones!!!!!! Your emojis are veeerrrryyyy ugggllyyyyyyy. 6g 1 beğenme Yanıtla
- \_al.noor1** Hope one day win #withBrand1 :(  
Brand-1 6g 2 beğenme Yanıtla
- taha\_kh\_n** Brand-1 is beautiful 31.127 beğenme

At the bottom, there are icons for like, comment, share, and bookmark, with the text '31.127 beğenme'.

Fig. 1. Brand-1 comments in the 11-06-2019 post

The screenshot shows the comments section for a post from 'Brand-2'. There are five visible comments:

- smsar\_7** We will always support you Brand-2 3g 2 beğenme Yanıtla
- imranshafikhan** yes only summers because by winters your phone wont get updates 3g Yanıtla  
— Yanıtları gör (1)
- omgisrachel** Got my Brand-2 pretty cool 21s Yanıtla
- ryan16isback** What next #Brand-2 21.543 görüntüleme

At the bottom, there are icons for like, comment, share, and bookmark.

Fig. 2. Brand-2 comments in the 15-06-2019 post

## 4. ANALYSIS AND RESULTS

Required libraries (Selenium, Emoji ,Time, Pyplot) are installed. Two functions are defined. The first function takes the username to take the photo in the Instagram account and what post it will use as a parameter. In this way, the post comes to the main page automatically with the link of the first photo. Each comment word found here is transferred to the string. These comments come with calling the function.

Friends for the summer, sisters for life. Celebrate them #withBrand-1: @okkymahardikha  
I have a request from you... 😊  
KINDLY CONTACT ME IF YOU'RE IN NEED OF A 4 YEARS CANADIAN VISIT,WORK OR PERMANENT RESIDENCE VISA  
VISA PROCESSING TIME 15 DAYS ONLY>> INBOX ME,  
INTERESTED CANDIDATES SHOULD FORWARD THEIR >>CV>>PASSPORT/PASSPORT DIGITAL PHOTO>>  
Can someone tell how to make my Brand-1 again because i drop my phone at top of the frame and the back door is having a gap  
Many flaws. 🌟Heats up strongly!, there is no possibility to block the curtain of applications on the locked screen, there i s no warning indicator.任何人都可以找到访问互联网。指纹识别工作得很差。相册是一个mess。编辑过的照片存储在一个无法理解的顺序。非常糟糕的视频质量! 🌟 接近视频工作得很差。视频在颤抖。前摄像头和后摄像头的照片质量都很差。当将视频传输到其他设备时，您始终可以看到可用的高质量视频。坏颜色Brand-1你骗了我们。🌟 这部手机不匹配它的价值。我很难过。被抛弃的钱。🌟  
Brand-1 🌟 poor quality 🌟  
Here, take my like :p  
.Bad experience..i will never buy Brand-1 ...they closes service centre whenever they want....gaurds were very rude...s taffs were full of attitude....Brand-1 should stop manufacturing mobile phones.. #chutiya\_company..  
@mercedes\_brothers

*Fig. 3. Brand-1 comments in the 11-06-2019 post*



*Fig. 4. Brand-1 comments emojis in the 11-06-2019 post*



*Fig. 5. Brand-1 positive emojis*



*Fig. 6. Brand-1 negative emojis*



*Fig. 7. Brand-1 neutral emojis*

Wherever you go, whatever you do, capture and relive your summer, your way, with Brand-2.

#Capturedon Brand-2 #TravelWithBrand-2  
#RewriteTheRules

Photo credits: @akacarson @panchaoyue @reubenkrabbe @alexandengphotography @raykoo لتخفيف الوزن السائد الجارسيتنا التي تمنع بشكل مؤقت قيام الجسم بتحويل الكربوهيدرات إلى دهون هي أحد المكونات الرئيسية لمجموعة Brand-2  
Please Let me , made a great searching server like #GOOGLE for #CHINA and for use in China's #smartphone.  
Soy una cuenta que sube todo sobre la tecnologia. Sigueme y te enteraras de todo 😊  
Let's do something like that @panchaoyue 🚀🚀🚀 need to make an epic Brand-2 shoot.  
Owww I really wnat one, but my Brand-2 never disappoint me!  
yes only summers because by winters your phone wont get updates 😊  
We will always support you Brand-2 😊  
Plz give me Brand-2 plz give me it in gift  
Follow us for more updates. Brand-2 OS. This fall.  
👉

*Fig. 8. Brand-2 comments in the 15-06-2019 post*



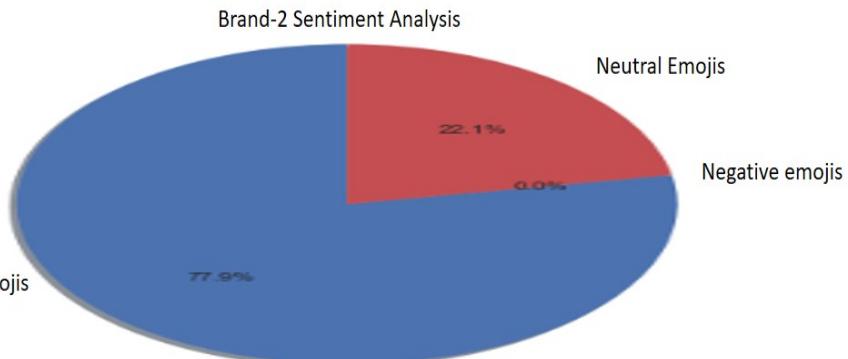
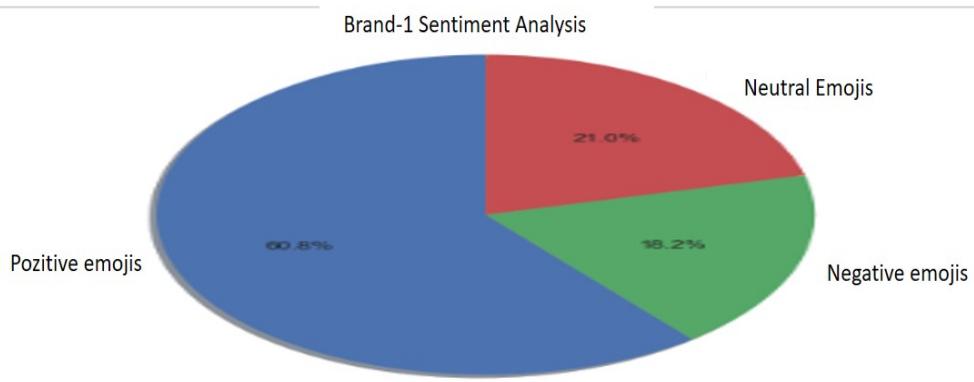
*Fig. 9. Brand-2 comments emojis in the 15-06-2019 post*



*Fig. 10. Brand-2 positive emojis*



*Fig. 11. Brand-2 neutral emojis*



*Fig. 12. Comparative pie chart represents latest instagram posts of Brand-1 and Brand-2*

## 5. CONCLUSION

The stories that promote your corporate identity can be told in a fun and effective way with visuals. Images directig to the website and informing about how the personnel serve their customers can be used. It is important to note that the images and messages shared on the Instagram account represent the brand identity and corporate culture strategically and accurately. In the presented work, the rate of reponses to the posts is measured with Python.

As a result of this study, the emoji analysis in the comments in the last post of the instagram account related to the instagram data obtained using Selenium was performed. With the results obtained, brands can make comparisons with other brands and can draw the most appropriate way for themselves, with the help of the feedback they receive.

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