Opinion Mining on PM's "Man Ki Baat" using R Programming

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Abstract- The web is a repository that holds valuable, vast and unstructured information about public opinion toward social events, political events, company strategies, marketing campaigns, and product preferences. Many emerging social, business-related geopolitical, and research questions can be answered by analyzing thousands, of responses and reactions (positive, negative, angry) expressed in various blogs (such as the blogosphere), social media and social networking sites (like YouTube, Facebook), virtual worlds such as tweets (Twitter). The datum generated every day is of high value and various meanings.

Keywords — *opinion, mining, unstructured, virtual world, blogosphere*

Introduction

Opinion mining is a very interesting and popular technique for extracting people's reaction and responses about a particular incident, product. This technique has application in nearly every field. This paper represents one of the application of oponion mining by analyzing the sentiments of people on PM Narendra Modi's mass interaction program <u>"MAN KI BAAT</u>" through his recent Facebook post using <u>R programming</u>. Reactions are extracted on the post using two methods in this paper. And the results from these methods are compared to obtain the accuracy. The accuracy of result (in terms of percentage of reactions) is also shown.

Technology

R is free, open-source, cross-platform programming environment. It is a very powerful tool for statistical and graphical representation of data. Dislike all other programming languages, R was designed particularly for statistical analysis, which makes it highly suitable for data scientists for analysis.[4]The tools available for carrying out text analysis or data analysis in R make it easy to perform powerful, accurate text analytics using very few simple commands. The key to R's sudden popularity and growth has been its highly populated collection of extension software libraries, known as packages in R's terminology, maintained by R's user community.

Packages

Power of R language can be enhanced by packages which is created by user generally developed using C, C++ and java. For specific statistical method, graphical plots (ggplots), Import/ Export abilities. CRAN is the official repository and it is a network of ftp and web servers maintained and supported by the R community around the world. It is coordinated by the R foundation, and for a package to be published here it has to pass several tests to make sure the publishing package is following CRAN policies. For the analysis of data on Facebook a package name R Facebook is used, for data trimming or cleaning tidytext is there, for Json type of data analysis (text) Rjson is used, sentiment analysis for sentimental analysis. The proposed work is carried out using RStudio Desktop. Features of Rstudio utilized are:-

- 1)IDE was created specifically for R language.
- 2)Packages with different functionality.
- 3)Data viewer.
- 4)Integrated R support and documentation.



Fig1:process of proposed methodology

Methodology

Finding the access token to connect R to Facebook account.

Access token from Facebook



Fig1: showing how to get access token from Facebook

Storing access token in a variable (access token) access_token<-

EAACEdEose0cBAIXyCEfbabA2aocozzdp42XUi MWlvLTg3Coz8FnPZBMAUfJE1FzGy0ouxewFG6 OTscW1bvMC6c16X5j7d6WUmyxD15oqtep9W3Y kWyv9z0t3DUo3UMEjfAFJe5NqEp6b2ZCgcoGna MBdZCX0teLKR8FLBy7npZAtwPi0rZBJ9aZAYH IrzeSwAYFoJDGRpH1pehbAavYTaXZA2P1OyCR mgo34EBcMtrXogZDD

Getting page from Facebook

page<-getPage("narendramodi",token	
access_token,n=100)	

Getting post from the page

post<-

getPost("177526890164_10160207502330165",toke n = acess_token,reactions = FALSE,n.comments = 2000,likes = FALSE,api = "v2.12")

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01	Filter						9,
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177526890164	Narendra Modi	Congratulations to ISRO - Indian Space Research Organi	2015-03-2012-02-000	photo	https://www.facebook.com/inarendramodi/photos/a.101_	177526880164_10160276473120165	114
177526890164	Narendra Modi	Tadasana has several benefits. This video shows you ho	2018-05-29711:34:49-0000	tides	https://www.facebook.com/natendramodi/Videos/10160	177526880164_10160276235935165	444
177526890164	Narendra Modi	Bhagwan Wahavir emphasised on peace, hormony and	2018-03-25705:04:18-0000	tides	https://www.facebook.com/harendramodi/videos/10160	177526880164_10160275305570165	<u>u</u> .
177526890164	Narendra Modi	Earlier today spoke in the Rajya Sabha and bid farewell	2015-03-2016-41:13+0000	photo	https://www.facebook.com/navendramodi/photosia.101	177525890164_10160272656620165	NJA.
177526890164	Narendra Modi	Texterday, Tjoined the ceremony marking the presentation.	2018-08-20105-09:21-0000	photo	https://www.facebook.com/narendramodi/photos/k-101	177526890164_10160270630370165	Narendra Modi az
177526890164	Narendra Modi	Attended the farewell function for Raya Sabha MPs wh	2018-05-27117-45-59+0000	photo	https://www.facebook.com/narendramodi/photos/a/101.	177526890164_10160267651000165	Narendra Modi ad
177526890164	Narendra Modi	It is time for the sweet revolution. Will you extend your s	2018-08-27707:04:15-0000	nides	https://www.facebook.com/harendramodi/videos/10160	177526880164_10160285200180165	144
177526890164	Narendra Modi	This year marks the start of #Bapu150. I want to hear fro	2018-03-26706:20-46-0000	photo	https://www.facebook.com/navendramodi/photosia.101	177526880164_10160258884905165	744
177526890164	Narendra Modi	Amazed at the creativity of a few youngsters, who made	2018-03-25712-03-0000	tides	https://www.facebook.com/narendramodi/videos/10160	177526880164_10160254605500165	AL.
177526890164	Narencha Modi	<u+0530><u+0532><u+0532><u+0532><u+0532><u+0533></u+0533></u+0532></u+0532></u+0532></u+0532></u+0530>	2018-03-25703:02:00-0000	nides	https://www.facebook.com/narendramodi/videos/10160	177526880164_10160253042315165	1943 C
177526890164	Narendra Modi	Had the honour of taking the President of Germany, Mr	2018-05-24717-08-10+0000	photo.	https://www.facebook.com/narendramodi/photos/a-101	177525890164_10160251046945185	Mc .
177526890164	Narendra Modi	A picture from yesterday's meeting with senior leaders a	2018-03-24705:10:16+0000	photo	https://www.facebook.com/harendramodi/photos/a 101	177526890164_10160249073515165	84.5
177526890164	Narendra Modi	Congratulations to all those elected to the Ragia Sabita	2116-05-23117-34:05-0000	photo	https://www.facebook.com/narendramodi/photos/a-101	177526890164_10160246647420185	ALC:
177526890164	Narendra Mod	During the peak of their youth, Bhagat Singh, Rajguru a	2018-03-23705-03-36-0000	rifes	https://www.facebook.com/harendramodi/videos/10160	177526890164_10160244583465165	MA C
177525890164	Narendra Modi	Saving water guarantees a better future for our obes an	2015-03-22704:55:35+0000	HIERD .	https://www.facebook.com/narendramodi/Videos/10160	177526890164_10160240384460165	54
177526890164	Narendra Modi	India is Rising on the World Stage and you can see this i	2018-05-21705-42-33-0000	nićez	https://www.facebook.com/harendramodi/videos/10160	177526890164_10160236028375165	MA.
171526890164	Narendra Modi	Moving from silos to solutions. Here is how we are doin	2018-03-2010-4-56-39-0000	uides	https://www.facebook.com/narendramodi/videos/10160	177526880164_10160230731675165	14
177526890164	Narendra Modi	Had a wonderful meeting with 10s Roberto Azevêdo, Dir	2118-05-19714-32-14-0000	photo	https://www.facebook.com/narendramodi/photos/a.101	177526880164, 10160227435135165	344
177526890164	Narendra Modi	For me, Roing India is the rise of pride, prosperity and d	2018-08-19705-31:15+0000	nites	https://www.facebook.com/narendramodi/videos/10160	177526880164_10160226061250165	14
177526890164	Narendra Modi	Several people across the nation are celebrating the star	2018-05-18707-23-54-0000	status	52	177526880164_10160221676185165	NA.
177526890164	Narendra Modi	<u+0915><u+0940><u+0937><u+0937><u+0937><u+0909></u+0909></u+0937></u+0937></u+0937></u+0940></u+0915>	2018-03-17718-21:13-0000	photo	https://www.facebook.com/harendramodi/photos/a 101_	177526890164_10160218929730165	Narendra Modi a
177526890164	Narendra Modi	Hoppy Ugadi Addressing a programme marking Ugadi a	2018-05-17114:15:51+0000	video	https://www.facebook.com/havendramodi/videos/10163	177525880164 10160217713455165	Narendra Modi w
ing 1 to 23 of	100 erbies						

Fig2: showing page information

Getting comment (after removing stickers and other ASCII values character) on post in a text file

comment<-post\$comments\$message comment.clean<-iconv(comment,sub = " ",'UTF-8','ASCII') comment.file<-file("comment.txt") writeLines(comment.clean,comment.file)

Obtaining reactions on the post

Two methods are proposed for extracting the reactions and performing analysis. On the basis of which it can be shown about a particular opinion that whether it is acceptable or not.

Method 1 for obtaining reactions

In method 1 for obtaining reactions on post, an available package have been used. With the help of available function in the package we have found the reactions on the post

reaction<-

=

as.data.frame(get_nrc_sentiment(comment.clean))

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2	0	1	0	0	0	0	0	0	0	1		
3	0	1	0	0	0	0	0	1	1	0		
4	0	1	0	0	0	0	0	1	0	2		
5	0	1	1	1	1	0	0	1	1	4		
6	0	0	0	0	0	0	0	1	0	1		
7	0	0	0	0	0	0	0	1	0	1		
8	1	1	1	1	1	1	1	0	1	1		
9	0	0	0	0	0	0	0	1	0	1		
0	1	2	0	0	2	1	1	4	2	3		
1	1	1	0	0	1	1	1	2	1	2		
2	0	1	0	1	0	1	0	2	1	6		
wi	ing 1 to 13	of 1,286 entries										

Fig3: showing details of reactions

post.positive<-sum(reaction\$positive) post.anticipation<-sum(reaction\$anticipation) post.trust<-sum(reaction\$trust) post.surprise<-sum(reaction\$surprise) post.negative<-sum(reaction\$negative) post.fear<-sum(reaction\$negative) post.anger<-sum(reaction\$fear) post.sad<-sum(reaction\$anger) post.sad<-sum(reaction\$sufpear) post.disgust<-sum(reaction\$disgust)

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Fig 4: Results after applying above instructions.

Method 2 for extracting reactions on a particular post

Three steps to obtain reactions on post using method 2.

Step 1: to clean comment taken in text file earlier

post.text<-scan(choose.files(),what = "char",sep = "\n") post.text<-tolower(post.text)</pre> post.split<-strsplit(post.text,"\\\W+",perl = TRUE)</pre> post.unlist<-unlist(post.split)</pre> post.table<-table(post.unlist)</pre> post.reaction<-as.data.frame(post.table)

Step2: to store words of language(english) associated with emotions with their respective sentiment or emotion in a dataframe(let it be temp)

temp<-get sentiments("nrc")

Step3: finding the reactions/emotions or sentiment of people by matching comments with temp dataframe and hence obtaing emotions or sentiments

```
v1<-c(1:6515)
v2<-c(1:13901)
i=1
j=1
for (i in v1) \{
j=1
 for (j in v2) {
  if(post.reaction$post.unlist[i]==temp$word[j]){
   post.reaction$sentiment[i]<-temp$sentiment[j]
   break
  }
  else
   if(j==13901)
    {
    post.reaction$sentiment[i]<-"null"
    }
  }
 }
```

} sub.positive<subset(post.reaction,post.reaction\$sentiment=="posit ive") sub.negative<subset(post.reaction,post.reaction\$sentiment=="nega tive") sub.trust`<subset(post.reaction,post.reaction\$sentiment=="trust ") sub.anticipation<subset(post.reaction,post.reaction\$sentiment=="antic ipation") sub.joy<subset(post.reaction,post.reaction\$sentiment=="joy") sub.anger<subset(post.reaction,post.reaction\$sentiment=="ange r") sub.fear<post.reaction,post.reaction\$sentiment=="fear") sub.surprise<subset(post.reaction,post.reaction\$sentiment=="surp rise") sub.disgust<subset(post.reaction,post.reaction\$sentiment=="disg ust") sub.sad<subset(post.reaction,post.reaction\$sentiment=="sadn ess") post.2.positive<-sum(sub.positive\$Freq)</pre> post.2.negative<-sum(sub.negative\$Freq)</pre> post.2.trust<-sum(sub.trust\$Freq)</pre> post.2.anticipation<-sum(sub.anticipation1\$Freq) post.2.anger<-sum(sub.anger\$Freq)</pre> post.2.fear<-sum(sub.fear\$Freq)</pre> post.2.surprise<-sum(sub.surprise\$Freq)</pre> post.2.sad<-sum(sub.sad\$Freq)</pre> post.2.disgust<-sum(sub.disgust\$Freq)</pre> Diado (De 1981) (De 1981) (De 1991) (De 1991) (De 1991)
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post.2.anticipation	552L
post.2.disgust	116L
post.2.fear	183L
post.2.negative	294L
post.2.postive	1020L
post.2.sad	2L
post.2.surprise	12L
post.2.trust	269L
post.anger	368
post.anticipation	646
post.disgust	227
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: = : ÷ : I = 0 II = Fig5: Results showing number of reactions on input post

Graphical representation of reactions or sentiments

1.Graphical representation of various sentiments

label<-

c("pos","ant","trust","sur","neg","ang","fear","sad"," dis")

values<-c(516,552,269,12,294,354,183,2,116) color<-

c("yellow","yellow","yellow","red","

barplot(values,names.arg = label,col=color)



Fig6: Showing different reactions on post

2. Graphical representation of total positive and total negative reactions

Label2<-("total positive", "total negative") Values2<-(1349,943) Color2<-("yellow", "red") Barplot(values2,names.arg = label2,col=color2)



Fig7: Histogram of total positive and negati reactions

Comparison of Methods (Accuracy Calculation)

Results obtained from both the methods are compared and this comparison gives us a idea about accuracy of results. The basis of comparison is percentage of results obtained. The results of comparison suggest that our data is highly accurate. Only a marginalised error of less than 4% in observed.

Sentiments	METHOD 1 Sentiments	METHOD 2	
Positive	1469	516	
Anticipation	646	552	
Trust	989	269	
Surprise	267	12	
Negative	742	294	
Anger	368	354	
Fear	390	183	
Sad	295	2	
Disgust	227	116	
Total	5393	2298	
Total positive sentiment(postive+anticipa tion+surprise+trust)	3371 (62.50%)	1349 (58.70%)	
Total negative sentiments(negative+anger +fear+sad+disgust)	870 (33.83%)	943 (41.0%)	

Table1: Result by method1 and method 2

Conclusion

The sentiment analysis of PM Narendra Modi's mass interaction program "MAN KI BAAT" using his recent Facebook post on the same is done using r programming. People expressed their opinion in large numbers and it is seen that 62% reactions of the people are positive and only 33 % are negative reactions. So it can be concluded that prime minister program to interact people through "MAN KI BAAT" is a successful program and creating a space in people's mind. This program can be used to create awareness about social and economic problems face by people. Hence it can be advised or concluded that this program "MAN KI BAAT" should be continued to have interaction with people in masses. The paper represents an algorithm for converting data into a useful form and extracting useful information that suits our requirements.

References

- [1] Xing Fang, Justin Zhan, "Sentiment analysis using product review data, Journal of Big Data, 16 June 2015.
- [2] Fiaidhi J, Mohammed O, Mohammed S, Fong S, Kim TH. Opinion mining over Twitter space: Classifying tweets programmatically using the R Approach. IEEE. 978-1-4673-2430-4/12.
- [3] T. R. Foundation, "R: What is R?,". [Online]. Available: https://www.r-project.org/about.html
- [4] Pooja Khanna, Sachin Kumar, Sumita Mishra, Anant Sinha "sentiment analysis: an approach to opinion mining from Twitter data using R", IJARCS, Volume 8, No. 8, September-October 2017.
- [5] Blog on term frequency and inverse document frequency: http://www.tfidf.com.
- [6] Xin Chen, Student Member, IEEE, Mihaela Vorvoreanu, and Krishna Madhavan, "Mining Social Media Data for Understanding Students' Learning Experiences", IEEE transactions on learning technologies, Vol. 7, No.3, July-September 2014.
- [7] Y.Sandeep et al, "Methodological Study of Opinion Retrieval Techniques for Twitter Social Network",

International Conference on Circuit, Power and Computing Technologies [ICCPCT],2015.

- FissehaBerhane, "Sentiment Analysis on Donald Trump using R and Tableau ", R news and tutorials contributed by (600) R bloggers , 2 January 2016. Shruti Kohli, Himani Singal, "Data Analysis with R", IEEE/ACM 7th International Conference on Utility and [8]
- [9] Cloud Computing,2014.
- Article on Twitter Sentiment Analysis training [10] dataset:http://thinknook.com/twitter-sentimentanalysistraining-corpus-dataset-2012-09-22.
- [11] G.Vinodhini and R.Chandrasekaran 'sentiment Analysis and opinion minning: A survey', International Journal vol.2, 6,2012.