SENTIMENT ANALYSIS OF E-VEHICLE IN SOCIAL MEDIA

Dr.REGAN MOODY
Dept. of Computer Applications
SOEL, TNDALU
Chennai, India

ABSTRACT: In recent years, the growth of fully electric vehicles is being increasing worldwide. In India, due to Government policies, environmental pollution awareness, fuel price increase leads to increase in sale of electric vehicle. In this paper, the people opinion about the electric vehicle is analyzed from the tweets using sentiment analysis by R. From the analysis, it is concluded that people show positive sentiments towards the electric vehicle.

KEYWORDS: Sentiment Analysis, Electric four-wheeler, Power consumption

I. INTRODUCTION

In India, the growth of electric vehicle is more promising. This is due to the fact that the Government policies including FAME incentives, rebate on electric vehicle, road tax exemption and 100% wavier of Registration tax. The other factors include awareness of the environmental pollution, fuel price increase and stringent emission norms. Electrical vehicle will reduce the crude oil dependence from other countries.

Due to the present pandemic situations, the public transportation is limited. Due to the fear of spread of virus, people prefer private transportation to commute to their office rather than public transportation [1]. ICRA believes that electric two wheelers to contribute around 10 percent new sales by 2025 in India [2]. As most of the people travel less distance between their residences and office, the people may prefer electric vehicle as cost of the vehicle is less. One possible solution for long distance travel is to adopt battery swapping. Overall, the operating cost per km is less in case of electric vehicle and it will be most promising mode of transportation.

In response to the above, many automotive OEM's and new start-ups have started to develop their own design and to start producing the vehicles in order to meet the customer

demands. However, in order to do understand the people opinion, a market study is essential. They are many proven methods are available to perform the market study. However, these methods involved lot of cost, geographic constraints, unable to capture the real feelings and other limitations are there. This limitation can be overcome by performing sentiment analysis using social network platform. Previous attempts have been made, however, a study on EV social media texts has yet to be fully explored.In this paper, the general public emotion on electric vehicle areanalyzed through sentiment analysis using twitter data as the data source.

II. LITERARTURE SURVEY

Sentiment analysis is a tool to detect and extract the people opinion and attitudes using the subjective information [3]. This technique is used to get the people opinion, when they express their sentiments on their own words, own vocabulary, own style, own method. Mainly the collective people response towards a common statement i.e. positive / neutral / negative is analyzed[4].

Francis Joseph Costello,KunChangLee [5] performed the sentiment analysis of electric vehicle through social media data's.They have demonstrated the effective way to analyze data on public opinion and evaluate the sentiment of this data in an efficient and effective manner.

Tejaswi Jha, Praneeth Guggila [6] performed the textual analysis of tweets about Tesla Model 3. A sample of 1000 tweets was analysed. They found that the there was a very strong liking among the users for this car. There were negligible negative tweets on Tesla Model 3.Animesh Kumar of Global Data [7] highlighted that EVs emerged as the most discussed topic on Twitter due to the fact that electrification being a key agenda in several countries and among OEMs.

III. SENTIMENT ANALYSIS

Twitter is one of the most popular networking sites. Twitter is a gold mine of data. The users can post their real time short message and it is called as tweets.People tweets their feeling, emotion and their opinion on any topic of their interest. These tweets are available in public domain. Through twitter API, tweets on specific topic can be extracted.

R is an open-source software. To preform statistical analysis, R is widely used by the researcher. Many packages are available for data analysis and to represent the data in graphical form.

The procedure to perform sentiment analysis using Twitter Tweets by R is shown in Figure 1. RTweet package in R is used in order to carry out the analysis. 2000 tweets have been collected and the tweets were analysed. The search keywords include E-Mobility, Electric vehicle, Zero emission, to remove the tweets duplication, replies and retweets are filtered out. Data pre-processing is made to remove the stop words, white spaces, punctuation marks.All the characters in the pre-processed text are converted into lower case.

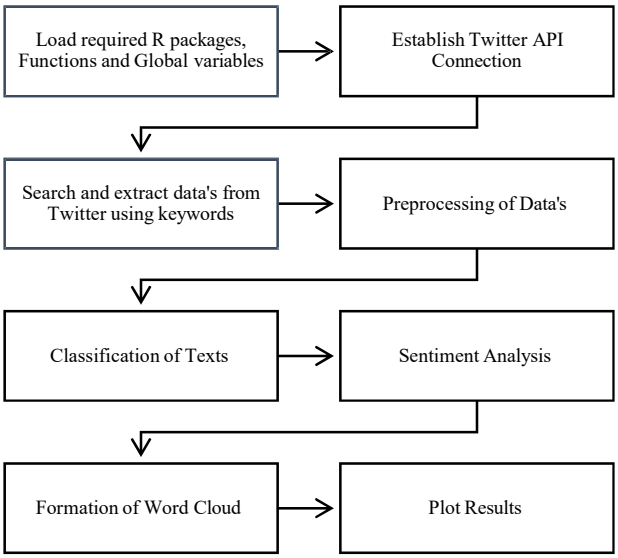

Fig. 1. Procedure to perform Sentiment Analysis using Tweets by R

Textual analytics is carried out based on the extraction of characters, syntactic / semantics features and its endogenous / exogenous features. Endogenous features include length of character, usage of special characters, keyword usage, hashtags and presence or absence of website URL Links. Exogenous features include external feature like device by which the tweet is tweeted, user location etc.

NLP stands for Natural Language Process. NLP is to build a classifier model based on tweets. The people opinion was collected as random sampling. From the analysis, people sentiment is good about the specific topic, if the score is high and it is bad is the score is less.

To analyse the tweets, NRC Emotion Lexicon is used. From the score, word cloud is formulated as shown in Figure 2.

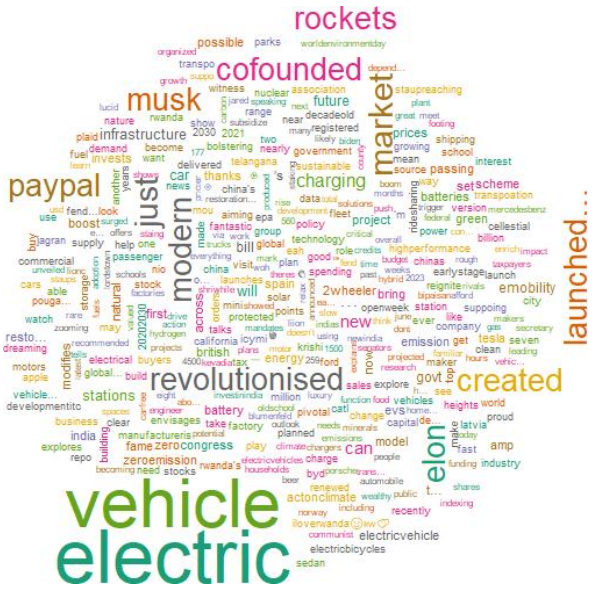

Fig. 2. Wordcloud about electric vehicle

The people opinion is classified into positive and negative sentiments and ten distinct feeling (viz. anger, anticipation, disgust, fear, joy, sadness, surprise, trust, negative, positive). The people sentiment is shown in Figure 3.From the result, it is observed that people show positive feeling towards the electric vehicles.

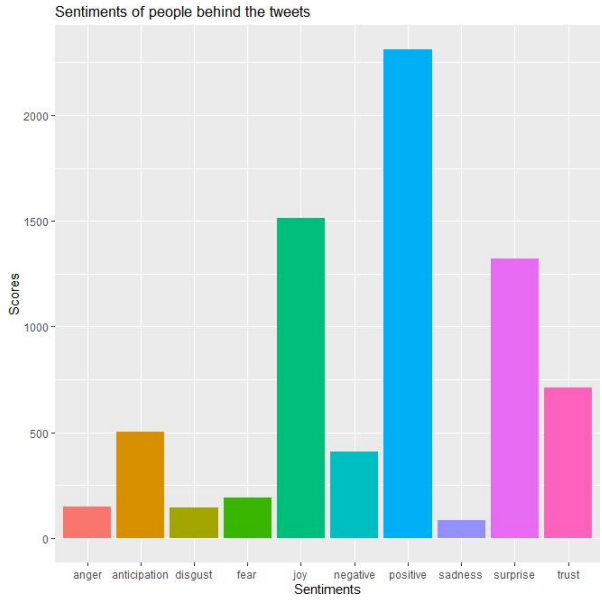

Fig. 3. Sentiments of people behind electric vehicle

IV. CONCLUSION

In India, the growth of electric vehicle is more promising due to various initiates taken by the Government. In order to understand the people opinion, sentiment analysis has been carried out using the popular social media Twitter. From the results it is inferred that the people are showing positive trends towards the electric vehicle. This work can be extended in the future to reduce the gap between considered vehicle model and real-time vehicle. Further, the vehicle dynamics parameters can be simulated further.

REFERENCES

1. https://auto.economictimes.indiatimes.com/news/two-wheelers/motorcycles/two-wheelers-may-get-personal-fillip-post-covid-19-lockdown/75146987
2. https://www.timesnownews.com/auto/bike-news/article/electric-two-wheelers-to-contribute-around-10-per-cent-new-sales-by-2025-in-india/762216
3. B. Liu, "Handbook Chapter: Sentiment Analysis and Subjectivity. Handbook of Natural Language Processing," Handbook of Natural Language Processing. Marcel Dekker, Inc. New York, NY, USA, 2009
4. K. Dave, S. Lawrence, and D. M. Pennock, "Mining the peanut gallery: Opinion extraction and semantic classification of product reviews," in Proceedings of the 12th international conference on World Wide Web, 2003, pp. 519–528
5. Costello, Francis & Lee, Kun. (2020). Exploring the Sentiment Analysis of Electric Vehicles Social Media Data by Using Feature Selection Methods. 18. 249-259. 10.14400/JDC.2020.18.2.249.
6. https://www.smart-energy.com/industry-sectors/electric-vehicles/evs-the-most-discussed-topic-on-twitter-report/
7. https://www.lexjansen.com/mwsug/2016/AA/MWSUG-2016-AA06.pdf