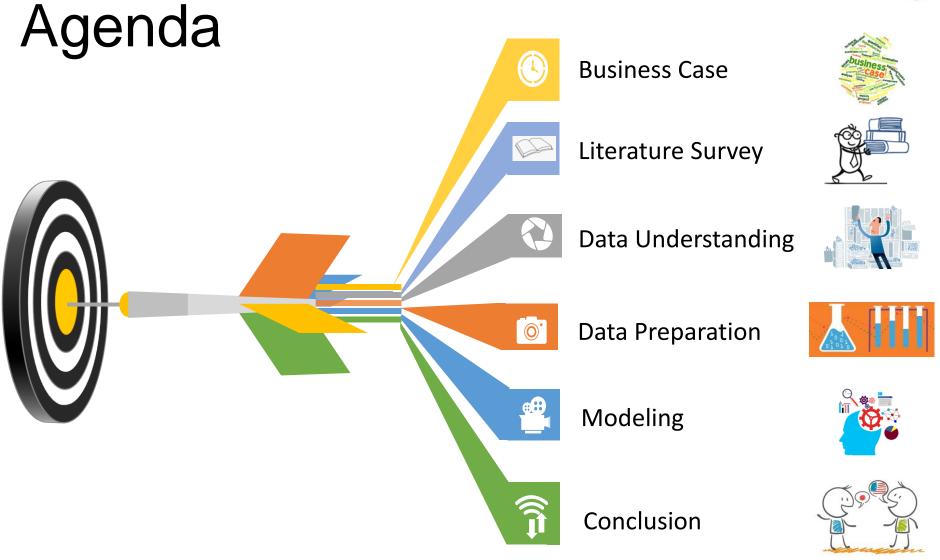


Virtual Market Survey on Automobile Infotainment Gadgets

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- Suresha H P
- Suresha K





Business Case

Overview:

- Today, it is easy to collect actual customer behavior data, to the point where analysis (or data mining) is much more challenging than data collection
- Social media sites become a huge source for consumer voices and Twitter is a great source of ready-to-use information that can be analyzed using text analysis
- By using virtual market survey analysis tool we can predict sentiments towards the product

Benefits:

- Cost Reduced amount of cost
- Time Reduced turnaround time for the market survey
- Big data Able to handle large amount of data











Problem Statement



By using collected dataset, in particular we are seeking to answer the following questions:

- Can Machine Learning / Al be used for Market Survey?
- What is users' opinion about vehicle infotainment gadgets?
- What is the feeling of users against different brands inside infotainment gadgets?
- What are frequently mentioned issues on social media as users communicate with brands?
- What's their thinking about these topics?
- How does the general behavior of users on social media differ when interacting with brands from their behavior?

Comparison –

Traditional v/s Virtual Market Survey



Traditional Market Survey	Virtual Market Survey		
Approaching individuals and getting opinion and feedback	Consumers give opinion, experience and feedback through online, social media		
Opinion can change over a time	Least possible of change of opinion		
Takes longer time	Online surveys is speed is biggest advantage		
Tedious process in collecting data	Available of big quantitative data		
Cost of complete process is high	Much less cost		
No visibility to other consumers	Product reviews are visible to other consumers too can influence decision		
Can be applied for participation of an older demographic too	Online audiences are skewed towards the young and digitally engaged		
Better suited to situations where the data being gathered is more nuanced, requires explanation or more thought	Used where fast, accurate quantitative data is required More authentic than traditional survey		

Literature Survey



Authors	Keywords		
Raj K. Kamalanath Sharma, 2015 Sarah E. Shukri, 2015	Approx. 64% of the respondents used a smartphone application to assist with their travel, Navigation And Real-time Traffic Information Systems, Safety, Bluetooth, In-Vehicle Technology		
Bhumika Gupta, 2017	100 million users generating over 500 million tweets every day, Python, Lexicon Based Approach, Natural Language Processing		
M. Ghiassi, 2013	Emoticon, Polarity, Sentiment Analysis, Ngram, Sentiment Analysis, Entertainment		
Prof. Sudarshan Sirsat, 2019 Sayali P, 2018	Naïve Bayes Classifier, Machine Learning Approach, Lexicon based Approach, Text Mining, TextBlob		
Xing Fang, 2015	Sentiment Categorization, Part Of Speech Tagging, ROC curves, SVM classifier, Random Forest, Twitter API		
Wilas Chamlertwat, 2012 Thida win Phyo, 2017	Information Extraction, Information Visualization, Natural Language Processing, POS features are not useful for sentiment analysis in the micro-blog domain, Machine learning algorithms have accuracy above 80% when trained with emoticon data and SVM outperforms other classification while unigram model surpass bigram and parts-of-speech (POS), TF-IDF, K-Means		
Alexander Pak, 2015	Emerging Topic Mining, Event Summarization, Positive, Negative, Neutral Sentiments, Support Vector Machine		
Sayali P, 2018	Dictionary based approach can give the accuracy of about 88 %, Sentiment Analysis, Machine Learning, Twitter, Opinion Score		
Kishori K, 2015	Google Translator, Data Corpus, Lexicon, Maximum Entropy Classifier		
Ajinkya Ingle, 2015 Prerna Mishra, 2016	Opinion Mining, Sentiment Analysis, Hadoop Cluster, Tokenization, Unstructured data, Stop Words, Machine Learning		
Rajni Singh, 2015	Pre-processing, Tokenization, Removal of Stop Words, Stemming		

Solution





Import required libraries and the **Dataset**

Do the
Exploratory
Data Analysis
to see if we
can find any
trends in the
dataset

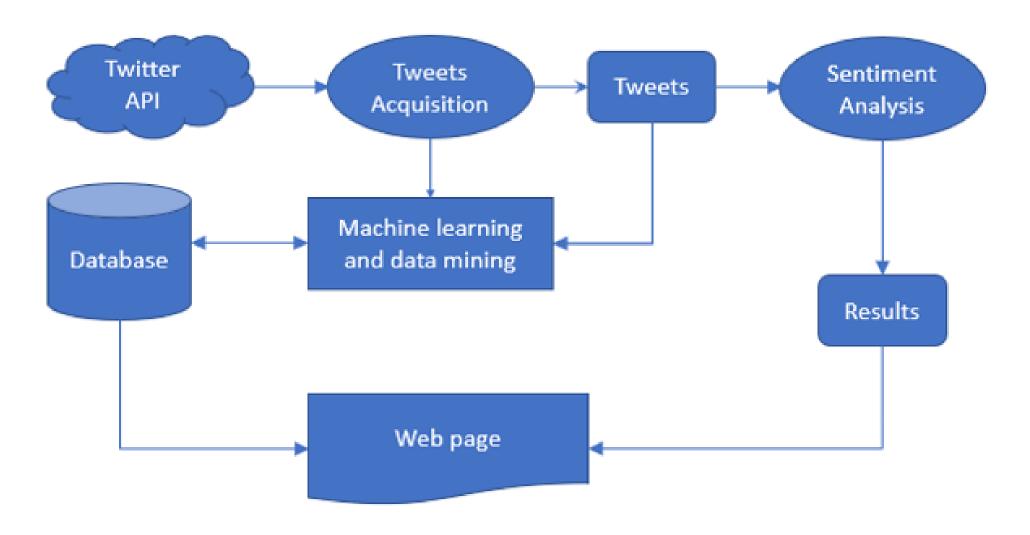
Perform
Manual
Labelling of
sentiments
and Text
Preprocessing

Use machine learning algorithms to **Train and Test** our sentiment analysis models

From this sentiment analysis, build a **Web-Tool** which is able to answer market survey questions and generate report

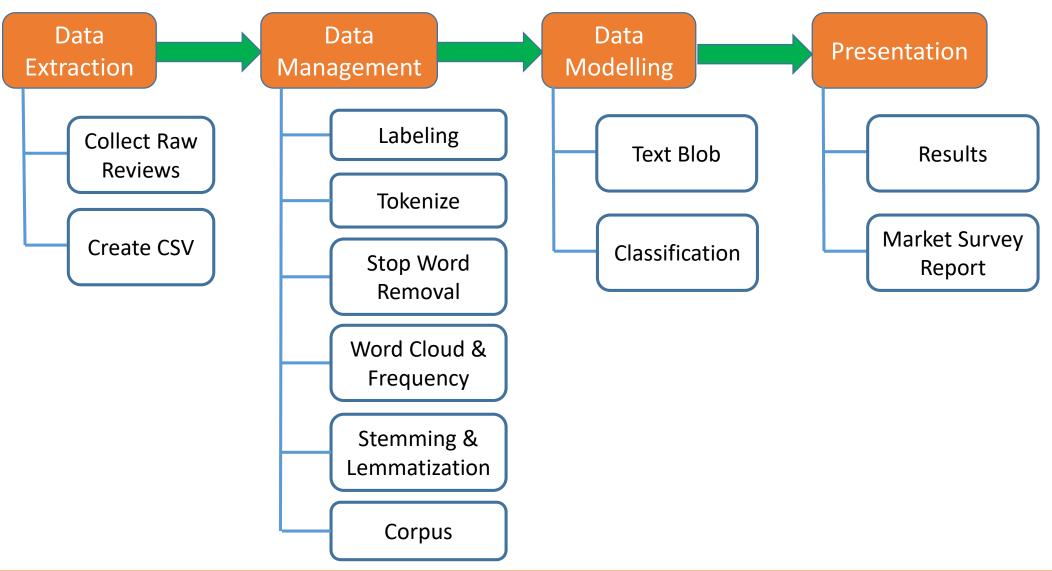
Proposal





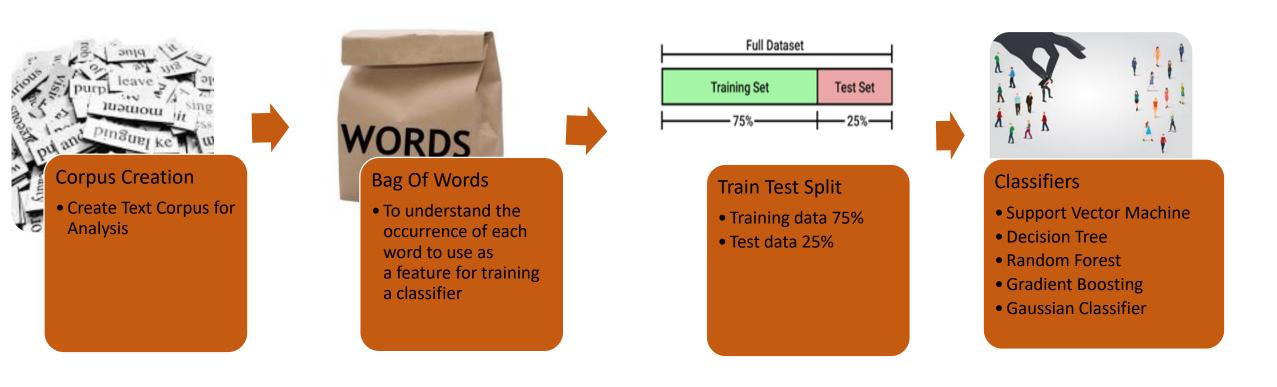
Data Pipe Line





Model Building





The tool helps to answer conventional market survey queries of customers about product review by predicting product review sentiments.

Data Set



Twitter data for the product Dash Cam has been extracted for the period Jan 2018 to November 2019 and are Data set contains: Tweets, Retweets, Location, User ID, Emoticons, Hashtags, URLS, Usernames

Tweets		
Our Top Pick of The Best Parking Mode s -		
Still watching #Russian compilations and "#meanwhileinrussia" videos? You're not alone		
out this great travel for your journey to Brighton from Worthing and ease your driving worries		
Shortcut! #trafficcircle https://t.co/JVp813qJsT		
Our DMS alarms include: ①Closed Eyes②Yawning③Inattention④Head Down⑤Calling⑥Smoking⑦Long Time Driving		
video shows the importance of having one in your car as s mer caught on era		
out this great travel for your journey to Tenby Pembrokeshire from Bridgend and ease your driving wo https://t.co/2zooqBlCfy		
When your friend invites you over for tea at her new house and she didn't tell you she moved into a mansion in San https://t.co/dY7aEhKC4E		
Monash Freeway 30 mins ago. Australia where are you traffic eras to catch these hoon drivers and keep our roads https://t.co/s4WYnxgFcb		
@lovedasauto @TorgutM @MailOnline @Sytner @BMW One less unsafe driver on the road. Too bad someone had to die first https://t.co/MIHLpWctIK		
@BrieThiele @JoshBreslowWKRN @WKRN Thx) #HandsFree #DashCam that Velcro comes in handy:)		

Data Preparation



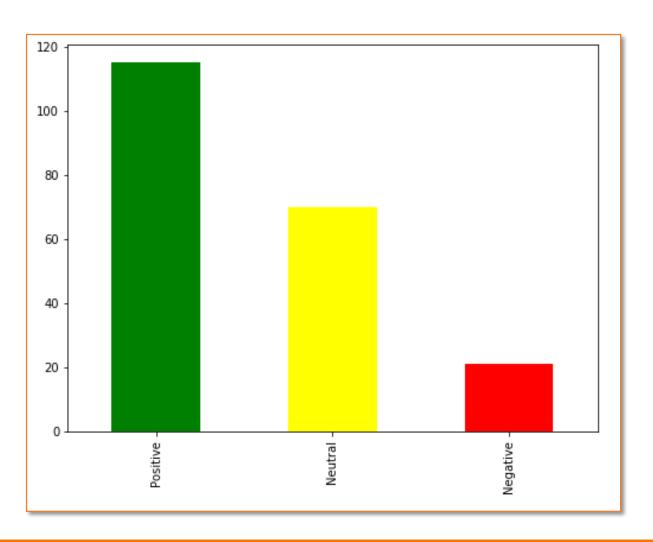
Added manual labeling for each tweets as 'Positive', Negative' and 'Neutral'

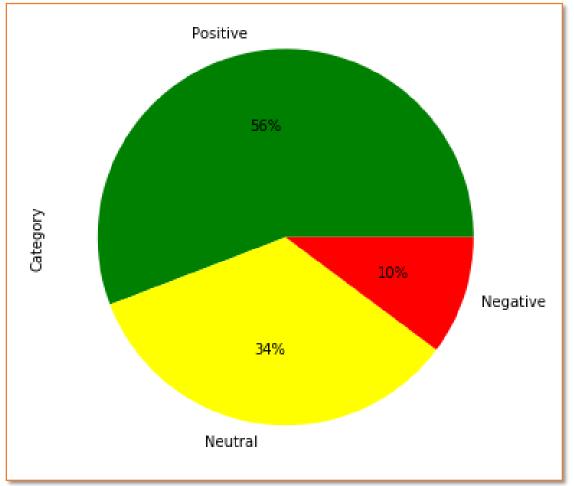
Tweets	Category
Our Top Pick of The Best Parking Mode s -	Positive
Still watching #Russian compilations and "#meanwhileinrussia" videos? You're not alone	Neutral
out this great travel for your journey to Brighton from Worthing and ease your driving worries	Positive
Shortcut! #trafficcircle https://t.co/JVp813qJsT	Neutral
Our DMS alarms include: ①Closed Eyes②Yawning③Inattention④Head Down⑤Calling⑥Smoking⑦Long Time Driving	Neutral
video shows the importance of having one in your car as s mer caught on era	Neutral
out this great travel for your journey to Tenby Pembrokeshire from Bridgend and ease your driving wo https://t.co/2zooqBICfy	Positive
When your friend invites you over for tea at her new house and she didn't tell you she moved into a mansion in San https://t.co/dY7aEhKC4E	Neutral
Monash Freeway 30 mins ago. Australia where are you traffic eras to catch these hoon drivers and keep our roads https://t.co/s4WYnxgFcb	Neutral
@lovedasauto @TorgutM @MailOnline @Sytner @BMW One less unsafe driver on the road. Too bad someone had to die first https://t.co/MIHLpWctIK	Negative
@BrieThiele @JoshBreslowWKRN @WKRN Thx) #HandsFree #DashCam that Velcro comes in handy:)	Positive

Data Understanding

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• Count of Positive, negative and neutral words from the data





Data Understanding (continued..)



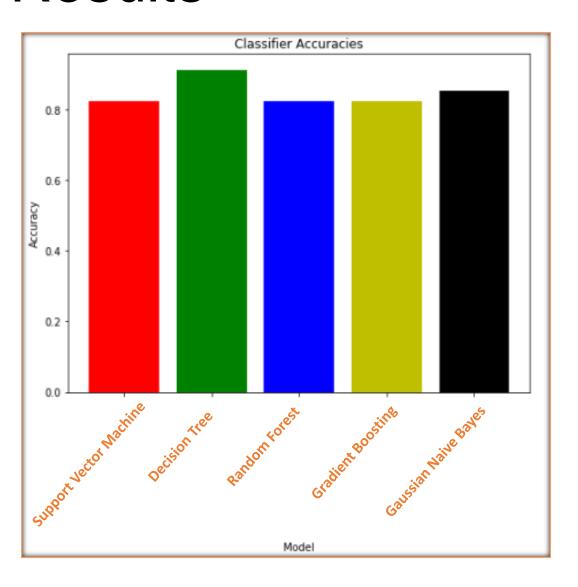
Word Frequency & Word Cloud

Words	Frequency			
Great	46			
Driving	42			
Travel	39			
Journey	38			
Ease	35			
Worries	30			
Car	20			
Camera	17			
Via	15			



Results





Based on used modeling techniques, Decision Tree is giving higher accuracy of 85%

Virtual Market Survey Report (Proposed)



MARKET SURVEY REPORT - Automobile Infotainment Gadgets

Product: Dashcam

Customer Reviews

Questions	Positive	Negative	Neutral	Trend
Features	70%	20%	10%	Positive
Cost	65%	20%	15%	Positive
Other Brands	40%	30%	30%	Neutral
Availability	60%	20%	20%	Positive

Note: Report is only for sample. No user data stored from Twitter.

Report Dashboard



Conclusion



- Twitter can be tremendously strong tool for organizations that want to make a difference in the world
- The key is learning the most effective way to use the real-time information network to meet the customer expectation
- In Virtual Market Survey (VMS), we've explored how any customer can best excel on VMS tool (Twitter) using a straightforward and effective framework. The mission of VMS tool (Twitter) —to promote open information—is at the heart of cause-based work, and our hope is that our model will help to reach customer effectively
- It is simple and easy to use. The barrier to entry is low, and the potential for impact is high. As such, it levels the playing field for change activation. In turn, the VMS tool framework is modeled
- As future possibilities, our model on Virtual Market Survey would be helpful to companies to reduce time and effort to analyze consumers' behavior, feedback on their infotainment gadgets and will help in upgrading features







