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Oscars 2017: Text Mining and Sentiment Analysis

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April 8 – 11 | Denver, CO

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Oscars 2017: Text Mining and Sentiment Analysis

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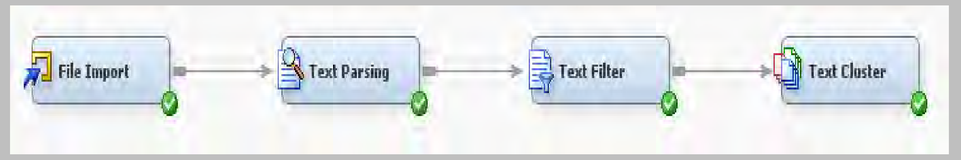
ABSTRACT

It has always been fascinating to realize how the magnitude of award shows have been increasing year after year. It is the enormously positive response of audience that keeps the stage shows to envisage. We know that sentiments of people play a crucial role in deciding the prospects of a particular event. This paper summarizes the sentiments of individuals towards one of the most awards popular show, Oscars. It provides crucial insights on how people sentiments could determine the success or failure of a show. The paper involves text mining of people's reactions towards the 2017 Oscars in general and a sentiment analysis of the best picture mix up using SAS® Sentiment Analysis Studio. This paper aims to determine the success of an awards show based on individual sentiments before the show, during and after the show. This paper uses Statistical model built using SAS® Sentiment Analysis Studio for predicting sentiments in test data. This paper concludes that the sentiments of the people were more positive or neutral indicating that the excitement about the show will over shadow any unwanted events.

METHODOLOGY

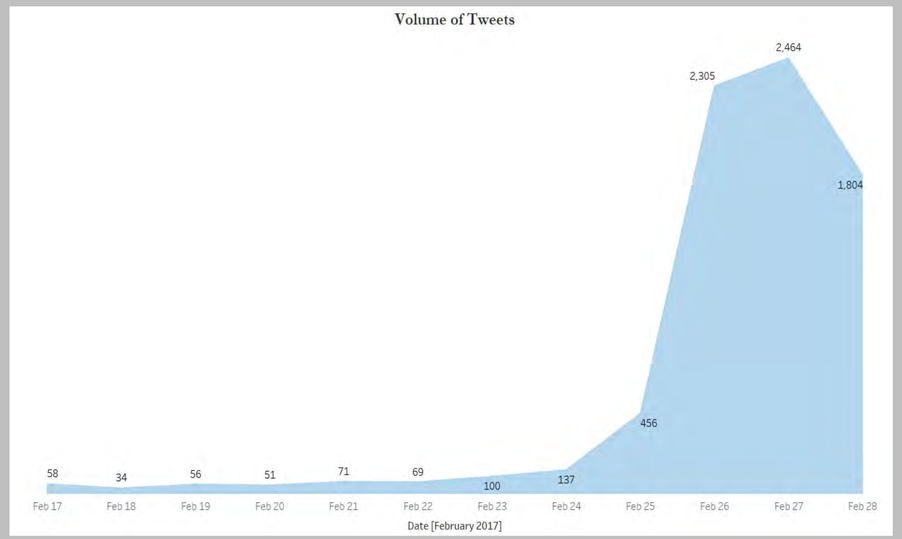


PROJECT CYCLE

- Identifying Business goals
- Collect/Identify data
- Clean, edit text data
- Parsing data
- Filtering data
- Text clustering
- Sentiment Mining
- Scoring new data
- Validate and deploy

DATA PREPERATION

- Collected tweets using twitter archiver
- Timeframe : Feb 17th,2017 to Feb 28th ,2017
- 7,605 tweets collected



DATA FILTERING

- Repeated punctuation sign normalization
- Lower casing and tokenization
- Word normalization
- User and topic labeling

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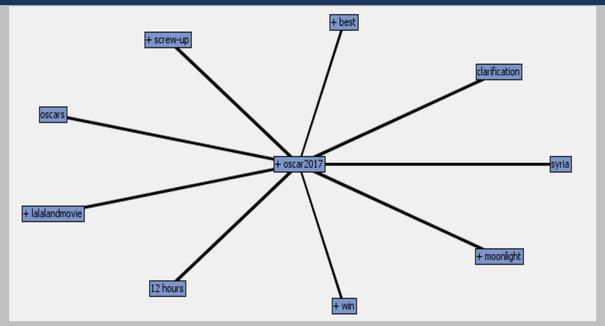
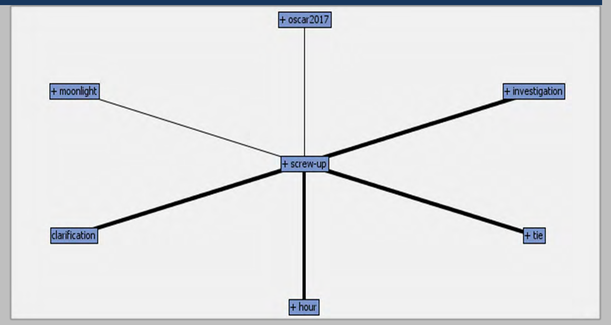
CONCEPT-LINKS

- Oscar
- Best
- Win
- Lalalandmovie
- Clarification
- Moonlight
- Screw-up



- Clarification
- Investigation
- Tie
- Hour
- Moonlight
- Oscar2017



CLUSTER ANALYSIS

Cluster1: Investigation+screw-up+oscar2017

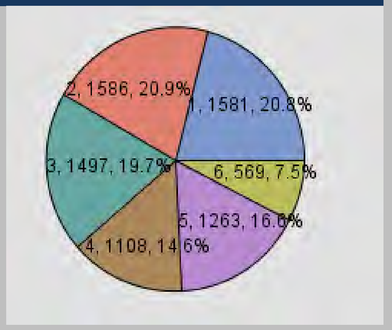
Cluster2:moonlight+Lalaland+ oscarfail

Cluster3: winner+picture+best

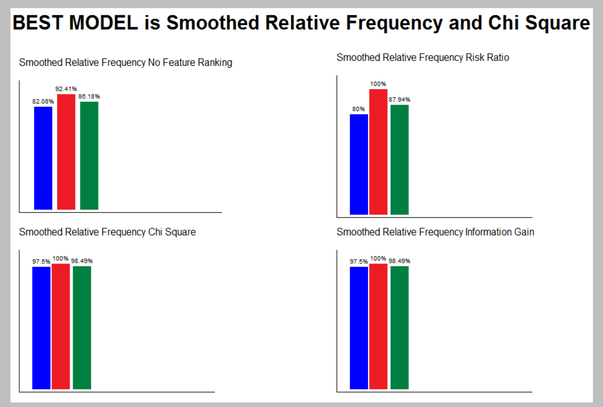
Cluster4: news+denzelwashington

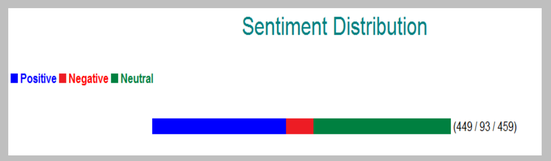
Cluster5:celeb+fashion hit+emmastone

Cluster6: white helmets+ryan gosling



SENTIMENT ANALYSIS





A sample of approximately 1000 tweets were taken and coded as positive, neutral and negative. This random sample is used to train the model. A simple model by combining the smoothed relative frequency text normalization method and chi-square feature-ranking algorithm is selected as the best model. The overall distribution of sentiments towards Oscars 2017 were 90% positive and neutral.

CONCLUSIONS

This paper sets a stage in order to analyze stage shows in general & people sentiments towards the shows will give us an idea of the success of the show. This paper not only deals with sentiments of the people before the show but also during & after the show and hence it gives a better picture of how to handle any unwanted circumstances during the event. This paper was started with an idea to identify the people reactions towards unwanted events during stage shows. We can conclude that taking Oscars2017 show into consideration, the sentiments of the people were more positive & neutral stating that the excitement of the people towards the show will over shadow any unwanted events.

ACKNOWLEGEMENT

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Paper 2846-2018

Oscars 2017 – Text Mining & Sentiment Analysis

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ABSTRACT

It has always been fascinating to realize how the magnitude of award shows have been increasing year after year. It is the enormously positive response of audience that keeps the stage shows to envisage. We know that sentiments of people play a crucial role in deciding the prospects of a particular event. This paper summarizes the sentiments of individuals towards one of the most awards popular show, Oscars. It provides crucial insights on how people sentiments could determine the success or failure of a show. The paper involves text mining of people's reactions towards the 2017 Oscars in general and a sentiment analysis of regarding the best picture mix up using SAS® Sentiment Analysis Studio.

This paper aims to determine the success of an awards show based on individual sentiments before the show, during and after the show. This information will give a better picture of how to handle any unwanted circumstances during the event. We can conclude from the 2017 Oscars that the sentiments of the people were more positive or neutral indicating that the excitement about the show will over shadow any unwanted events. This analysis can be extended to build a text predictive model wherein there is a scope of predicting the sentiments towards unwanted events and will help us to set the stage better and be prepared for potential problems.

INTRODUCTION

Oscars is the most awaited event for every actor including the world audience every year as it leaves memorable moments for them to cherish. Analyzing people's reactions to such an event will give us an understanding of whether the audience enjoyed the show and whether the awards that were given away to actors fall in line with their opinions. It will also be interesting to see how people reacted to the best picture mix up that happened in Oscars 2017.

Social media has evolved as a platform where we can directly evaluate people's liking or disliking to an event. Understanding people's opinion on a social media platform will open us to an unbiased environment. There are no filters to the way people react to an event, and the information that we can tap in from such a platform gives us different perspectives. This provides us a lot of scope to improve the events in the future, and we get a sense of how people receive when something unexpected happens at grand events.

This research paper puts forward an analysis based on the sentiments of the audience during 2017 Oscars with the Best Motion Picture mix up. Analyzing people's reaction towards the Best picture mix up will help us to handle such unexpected events in a better way.

DATA INFORMATION

The social media platform chosen for this analysis is Twitter. The tweets are collected using twitter archiver in google spreadsheets. The tweets are collected in the timeframe Feb 17th,2017 to Feb 28th ,2017 and around 7605 tweets are collected in this timeframe in English language.

We can observe the volume of tweets collected each day in the period considered. The tweets collected were maximum on the day before the OSCAR 2017 event and on the date of the event as seen below.

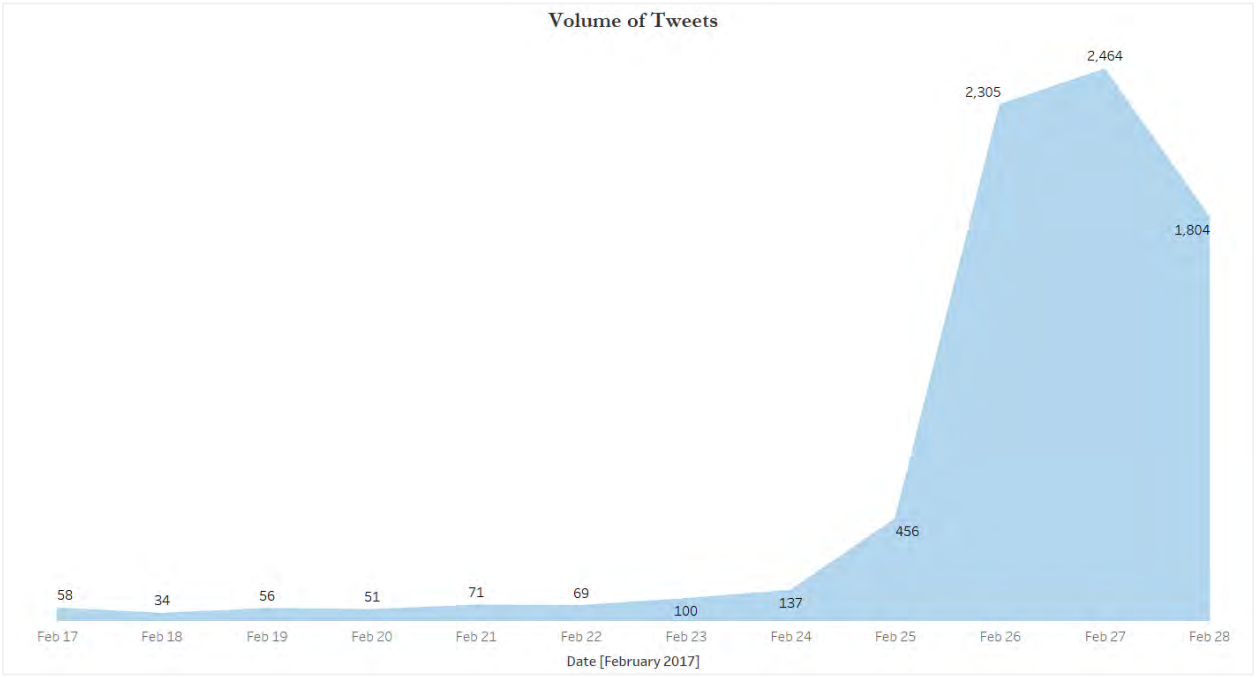

Figure 1. Volume of Tweets

One example of the database for one tweet:

	Date	App	Followers	Follows	Retweets	Favorites	Verified	Location	Bio	Screen_Name	Full_Name
1	17FEB17:06:43:17	Twitter for Android	1098	1236	2	0	No		Top Rated Plus eBay Seller	@AuriesDesigns	Aurie

Tweet_Text	Tweet_ID	User_Since	Profile_Image	Google_Maps
RT @RealZoeHewitt: Did #AmyAdams deserve an #Oscar2017 nomination? Check out my #moviereviews w link in bio. #amivalmovie #femalemoviecrit...	832601314559348736	19237.988113	View	

With techniques of text mining, we create a database where we use each word in the tweet like variables. Then using the frequent words in the database, we apply text-mining techniques.

Metadata

Variable Name	Type	Format	Length	Description
Date	Date	DATE9	8	Date on which the tweet was posted

Screen Name	String	CHAR20	20	Username of the twitter
Full Name	String	CHAR20	20	Name of the Tweeter
Tweet Text	String	CHAR 200	200	The actual text of the tweet
Tweet ID	String	CHAR20	20	Unique ID of the tweeter
App	String	CHAR50	50	Device through which the tweet was posted
Followers	Number	BEST12	8	Number of followers for that twitter
Follows	Number	BEST12	8	Number of fellow tweeters he/she follows
Retweets	Number	BEST12	8	Number of times hi/her tweet has been retweeted
Favourite	Number	BEST12	8	Total number of likes for that tweet
Verified	Number	Boolean	1	Flag of verification
User Since	DATE	DATE9	8	Time since the twitter account is active
Location	String	CHAR150	150	Location of tweet
Bio	String	CHAR150	150	Biography information the user

Table 1. Metadata of the dataset

METHODOLOGY

The modelling approach followed for the project is SEMMA (Sample, Explore, Modify, Model, Access). The data was partitioned into training, validation & score data. The training data is used to build the model. Validation data is used to test the accuracy of the model. Scoring dataset is used in the sentimental analysis to score the model & get sentimental distribution in the data.

For Sentimental Analysis, the twitted feed was classified into positive & negative categories and this sample was used to train the statistical model in the sentimental analysis studio.

Figure 2. SAS EM flow diagram

SAS TEXT MINING ANALYSIS

The figure shows the different nodes that are used for extraction & analysis of different words from the tweets database.

The ZIPF plot shows the ranking of the words based on its frequency of occurrence in each tweet.

From the below plot we can see that only two words that occurred with the highest frequency are Oscar2017 & rt. rt does not have any significance and is dropped using the text filter node.

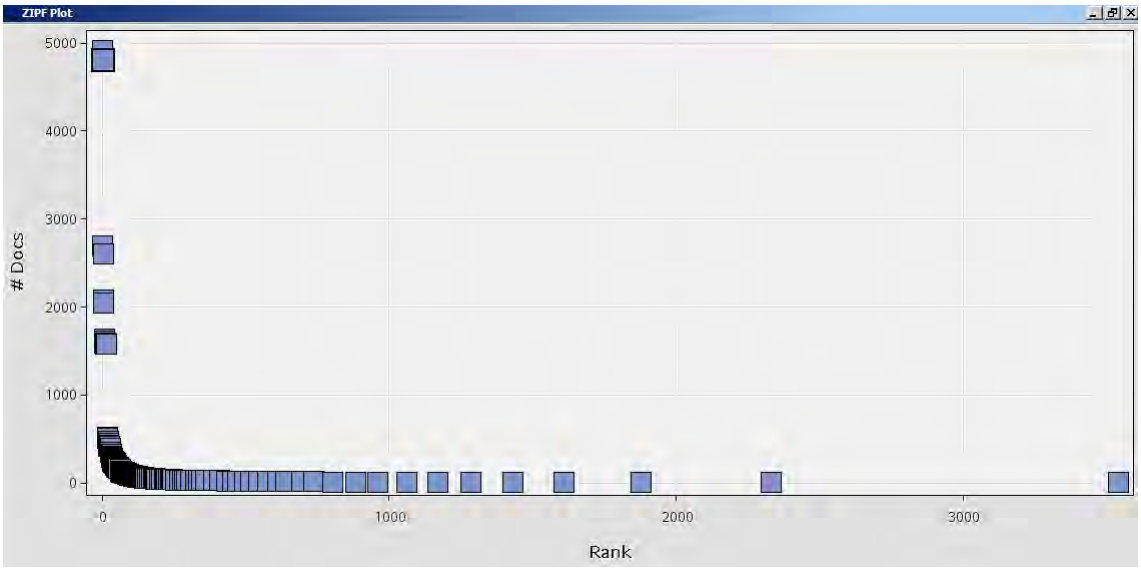

Figure 3. ZIPF plot

As we can see form the below term matrix that oscar2017 & RT are the most frequent words and RT is dropped. We can also observe that the frequency of oscar2017 has increased, it is because all the synonyms of oscar2017 have been merged together.

Terms

	TERM	FREQ ▼	# DOCS	KEEP	WEIGHT	ROLE	ATTRIBUTE
⊞	oscar2017	9889	7546	☑	0.009	Miscellaneous Pro…	Entity
	rt	4932	4916	☐	0.0	Miscellaneous Pro…	Entity
⊞	s	3655	2039	☐	0.0		Alpha
⊞	be	2709	2598	☐	0.0		Alpha
	more	1635	1634	☐	0.0		Alpha
⊞	hour	1608	1608	☑	0.174		Alpha
⊞	russia	1594	1594	☐	0.0	Location	Entity
⊞	investigation	1589	1589	☑	0.175		Alpha
	trump	1589	1589	☑	0.175	Miscellaneous Pro…	Entity
⊞	screw-up	1584	1584	☑	0.176		Mixed
	ananavarro	1582	1582	☑	0.176		Alpha
⊞	tie	1582	1582	☑	0.176		Alpha
	12 hours	1581	1581	☑	0.176	Time Period	Entity
	clarification	1581	1581	☑	0.176		Alpha
	oscar2017 screw-up	1581	1581	☑	0.176	Miscellaneous Pro…	Entity
⊞	win	565	513	☑	0.306		Alpha
⊞	best	536	513	☑	0.305		Alpha
⊞	not	533	502	☐	0.0		Alpha
⊞	lalalandmovie	513	477	☑	0.313	Miscellaneous Pro…	Entity
	syria	452	452	☑	0.316	Location	Entity
	oscars	428	428	☑	0.322	Miscellaneous Pro…	Entity
⊞	statement	413	413	☑	0.326		Alpha
⊞	defence	412	412	☑	0.326		Alpha
	civil defence statement	411	411	☐	0.0	Noun Group	Alpha
	civil	411	411	☐	0.0		Alpha
	25th february 2017	411	411	☑	0.327		Mixed

Figure 4. Term Matrix

The following concept link diagram has been obtained using the most frequent term in the tweets oscar2017.

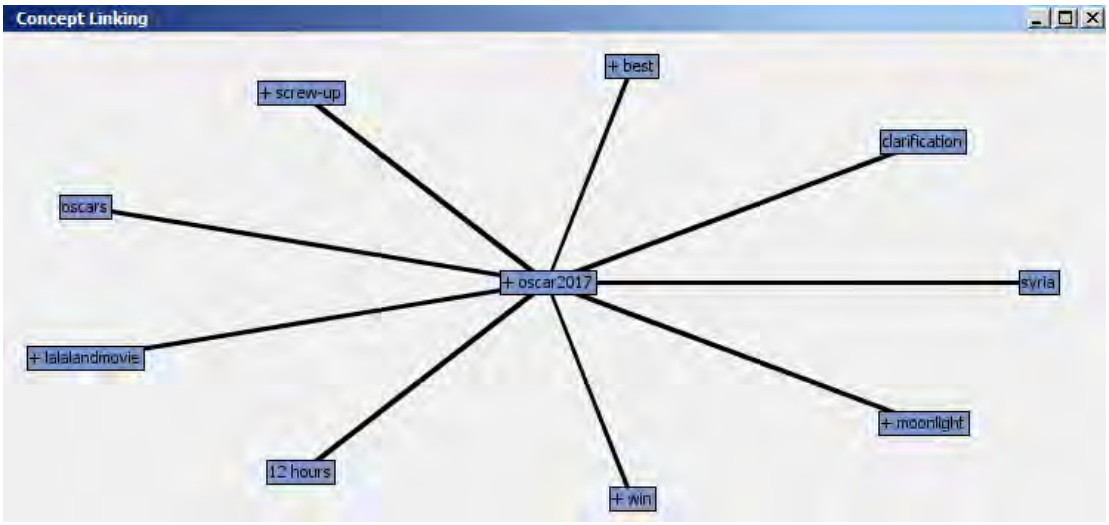

Figure 5. Concept Link Diagram – Oscar2017

The above concept link diagram shows how oscar2017 is related to words like:

Oscars – it shows that the people not only expressed their views about oscars2017 but also about the Oscars event in general.

Best, win – The word best has a strong link with oscars2017 since people have strong inclination towards knowing the best actor, best movie and other actors who won the award.Lalalandmovie, moonlight, screw-up, clarification – These words are significant in revealing people's sentiment towards the best picture mix up that happened between Lalaland & moonlight movies. The thickness of these words linking to oscars2017 is more, which shows that lot of people, have expressed their views on the confusion that took place for the best picture award.

The following concept link diagram is based on the term 'screw-up'.

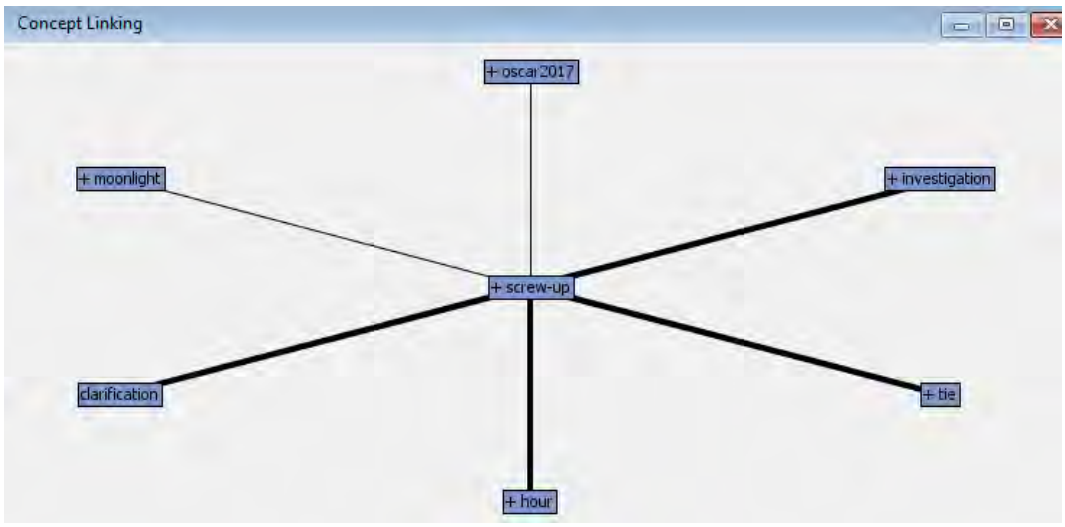

Figure 6. Concept Link Diagram – Screw-up

The above concept link diagram is taken into consideration since we wanted to analyze the sentiments of the people towards the best picture mix-up and this concept link diagram will lay a foundation for the sentimental analysis. The concept link diagram above helps us to train our statistical model better, we can identify easily the terms that are strongly associated with 'screw-up'.

The terms strongly associated with 'screw-up' are

Oscar2017 – association of this term is blatant since the mix up happened in Oscars 2017.

Investigation – An Investigation has been called upon after the best picture mix-up happened.

Clarification- This term appeared as one of the strong links since there are many people who have commented their opinions on the clarification later happened about the best picture mix-up.

The following cluster diagram was obtained using the text cluster analysis on the twitter feeds.

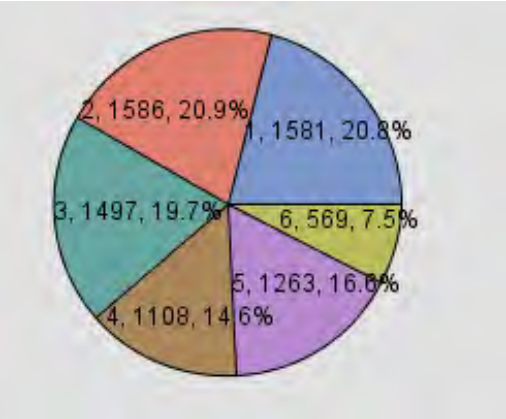

Figure 7. Cluster diagram

The method used for text clustering is Expectation Maximization method. There are 6 clusters obtained with significant difference. The clusters are separated by a significant distance & are the observations are uniformly distributed.

Clusters

Cluster ID	Descriptive Terms	Frequency	Percentage	Coordinate 1	Coordinate 2	Coordinate 3	Coordinate 4	Coordinate 5	Coordinate 6	Coordinate 7
1	+hour +investigation +screw-up +tie clarification +oscar2017 ...	1581	21%	0.99999	.0009478	-0.0027	0.001576	-0.00164	.0009007	1.495E-5
2	+moonlight +best +love land +lalaland +movie +oscars2017 +lol +oscarfail +actor +manchester +arrival +prediction hidd...	1586	21%	0.001998	-0.01036	0.219762	-0.05384	0.096204	-0.05195	0.021783
3	+win +best +night +winner +picture +film complete +tonight ready +pay +nominee +watch tntla andresnavyz +list ...	1497	20%	0.001768	-0.01127	0.142381	-0.11629	0.234516	-0.07164	-0.0192
4	+oscar2017 +statement majdkhalaf1993 +news +play +remember +oscarfail +want +live denzelwashington +stop +show ...	1108	15%	0.17301	-0.06881	0.196987	-0.22838	0.174401	-0.07911	-0.02841
5	+miss +tune +celeb +fashion hit +choice +award +year +look +theacademy +academyawards +emmastone +'oscar2017 ...	1263	17%	0.005751	-0.14622	0.066379	-0.05862	0.098793	-0.06336	0.01445
6	+white +hollywood fake group face-lift +good red carpet 'red carpet' +'white helmet' ryan +gosling +life +wait redcarpet ...	569	7%	0.001473	-0.00563	0.038329	-0.35967	-0.1198	0.012367	-0.00463

Table 2. Cluster Table

The above cluster table shows the clusters formed and are sorted based on the frequency.

The cluster Id 1 contains the terms hour, investigation, screw-up, tie, clarification & Oscar2017. This cluster contains the data mainly about how best picture mix up has happened. The clarifications given after the show & the investigation that happened post the event. This cluster will be useful for analysis of people's sentiments towards the best picture mix up.

The Cluster Id 2 contains the terms moonlight, best, love, land Lalaland, movie, lol, actor etc. This cluster helps us to understand the general reaction of the people towards the Oscars and how excited were they about the Oscars2017.

Similarly, Cluster Id 3 gives us information about the data regarding the nominations & winners and the list.

Cluster Id 4 gives us information about the Oscar fail, which means how Oscars has failed to conduct a good show in the end. This Cluster is in a way related to cluster Id 1.

SENTIMENTAL ANALYSIS

Our sentiment analysis system is based on exploiting as features sentiment dictionaries, emoticon lists, slang lists and other social media-specific features. We do not employ any specific language analysis software.

Additionally, the language employed in Twitter has specific characteristics, such as the markup of tweetsthat were reposted by other users with “RT”, the markup of topics using the “#” (hash sign) and other users using the “@” sign.

All these aspects must be considered at the time of processing tweets. As such, before applying supervisedlearning to classify the sentiment of the tweets, we preprocess them, to normalize the language they contain.

The pre-processing stage contains the following steps:

Repeated punctuation sign normalization

In the first step of the pre-processing, we detect repetitions of punctuation signs (“.”, “!” and“?”). Multiple consecutive punctuation signs are replaced with the labels “multi stop”, for the full stops, “multi exclamation” in the case of exclamation sign and “multi question” for the question mark and spaces before and after.

Lower casing and tokenization

Subsequently, the tweets are lower cased and split into tokens, based on spaces and punctuationsigns.

Word normalization

At this stage, the tokens are compared to entries in Thesaurus. If no match is found, repeated letters are sequentially reduced to two orone until a match is found in the dictionary (e.g.perrrrrrrrrrrrrrrrrrfeeect” becomes “perrfeect”,“perfeect”, “perrfect” and subsequently “perfect”).The words used in this form are maked as “stressed”.

User and topic labeling

Finally, the users mentioned in the tweet, which are marked with “@”, are replaced with “PERSON” and the topics, which the tweet refers to (marked with “#”, are replaced with “TOPIC”.

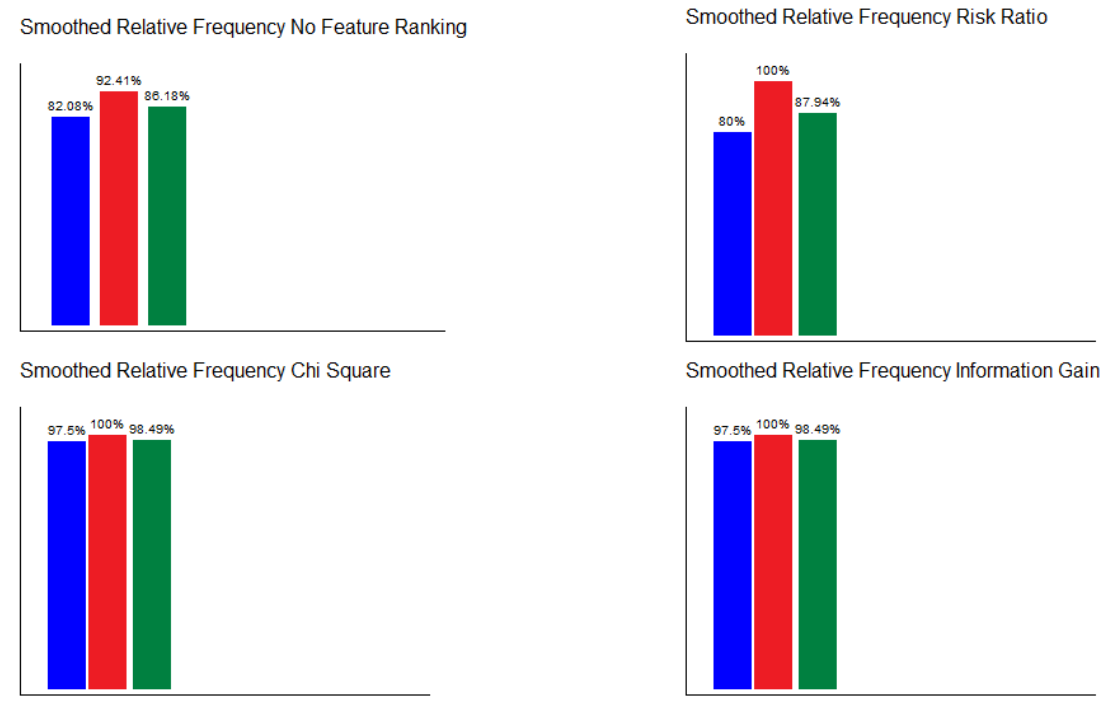

Figure 8. Statistical Model

A statistical model has been built based on twitter feed classified into positive & negative comments. The above statistical model shows the relative frequency of the tweets data towards Oscars2017 & the best picture mix-up happened combined. This statistical model helps us to identify the polarity of the comments.

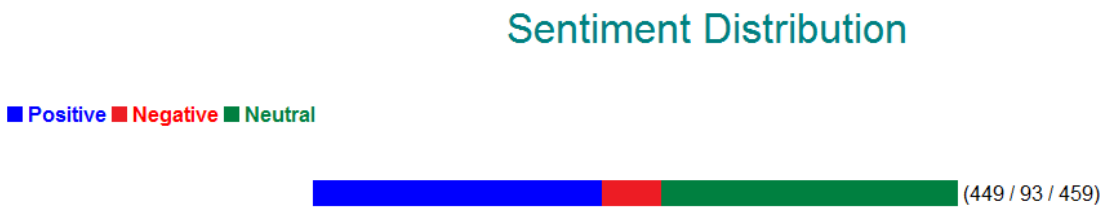

Figure 9. Sentimental Distribution of Statistical Model

The above sentiment Distribution has been obtained by scoring the statistical model using 1000 distinct comments. We can observe the distribution consists of more positive & neutral comments. This is a positive sign as people who were excited about the Oscars2017 outnumbered the people who were unhappy about the event.

CONCLUSIONS AND FUTURE WORK

This paper sets a stage in order to analyze stage shows in general & people sentiments towards the shows will give us an idea of the success of the show. This paper not only deals with sentiments of the people before the show but also during & after the show and hence it gives a better picture of how to handle any unwanted circumstances during the event. This paper was started with an idea to identify the people reaction towards unwanted events during stage shows. We can conclude that taking Oscars2017 show into consideration, the sentiments of the people were more positive & neutral stating that the excitement of the people towards the show will over shadow any unwanted events. This analysis can be extended to build a text predictive model wherein there is a scope of predicting the sentiments towards unwanted events & will help us to set the stage better and prepared.

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4. https://en.wikipedia.org/wiki/89th_Academy_Awards

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