



BENNETT
UNIVERSITY
TIMES OF INDIA GROUP

Instantaneous Reviews

- Gaurang Shukla (E19CSE341)
- Harshit Singh (E19CSE309)
- Sumit Kumar (E19CSE148)

Introduction:

- In this digital era, movie creators look for an online platform and influencers to promote their movies through different social media platforms and movie rating websites.
- This has led to the creation of fake reviews and ratings for the movies.
- The audience spare their time to rejuvenate themselves by going to theatres and watching a movie. They decide which movie to watch based on the reviews. But then while watching the movie based on the reviews, they find that the movies completely opposite to the reviews

Using the facial emotion recognition technique, we have come up with a solution to the above problem by creating a software that would generate unbiased review of a movie or documentary based on the expressions of the audience watching it in movie theatres.

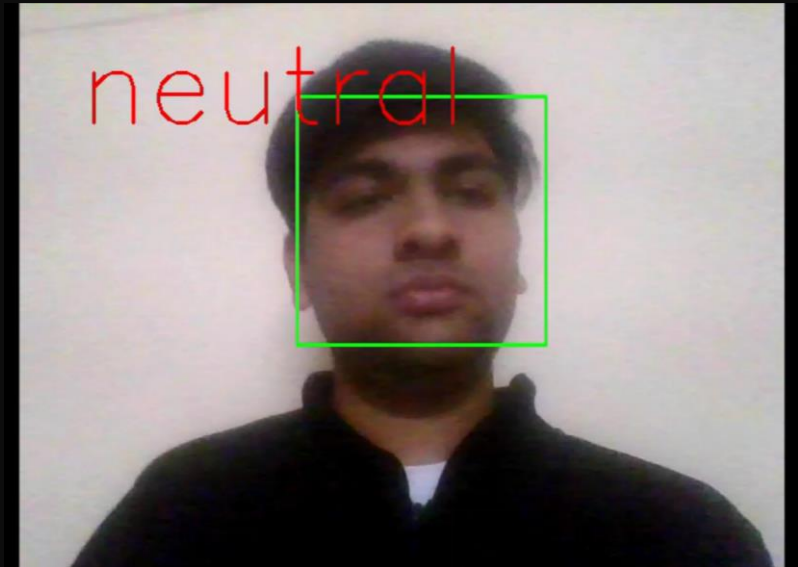
Facial Expression Recognition

- For our review generation system, facial expression analysis of individuals is required
- The tool used for analysis of facial expressions is “DeepFace”. This tool outputs the facial expression of an individual in a still photo
- In order to get data of an individual from a video, “OpenCV” in conjunction with “DeepFace” has been used to do frame by frame analysis



OpenCV and DeepFace

- OpenCV has been used to access the webcam. As OpenCV accesses the webcam using loops that capture a single frame at a time, the analysis of each frame is possible
- DeepFace is then used to do frame by frame facial expression analysis





Building the Dataset

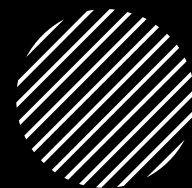
- For this task, separate CSV files were made for different types/genres of movies and one CSV file that contains all the data
- Here, for a comedy movie, the data would get written in the file comedy.csv, data for horror would get written in horror.csv and so on
- OpenCV and DeepFace were used to store the ratios of number of frames with a particular emotion to the total number of frames captured

Comedy.csv:

	angry	disgust	fear	happy	sad	surprise	neutral	total	enjoyed
0	0.000540	0.0	0.001080	0.508099	0.000540	0.000000	0.489741	1750	1
1	0.017011	0.0	0.000460	0.364598	0.005057	0.000000	0.612874	2175	1
2	0.043621	0.0	0.001091	0.565976	0.024718	0.000000	0.364595	2751	1
3	0.039853	0.0	0.000613	0.009810	0.304721	0.000000	0.645003	1631	0
4	0.016008	0.0	0.015492	0.027369	0.034599	0.000000	0.906532	3873	0
5	0.017026	0.0	0.006651	0.320298	0.035382	0.000000	0.620644	3759	0
6	0.020944	0.0	0.011254	0.549859	0.021569	0.000000	0.396374	3199	1
7	0.041778	0.0	0.035646	0.409352	0.085473	0.000000	0.427750	2609	1
8	0.131829	0.0	0.015835	0.531671	0.041172	0.000000	0.279493	2526	1
9	0.016685	0.0	0.000000	0.045606	0.032258	0.000000	0.905451	899	0
10	0.054252	0.0	0.029326	0.475073	0.023460	0.000000	0.417889	1364	1

All.csv:

	angry	disgust	fear	happy	sad	surprise	neutral	action	comedy	drama	horror	romance	total	enjoyed
0	0.000540	0.0	0.001080	0.508099	0.000540	0.0	0.489741	0	1	0	0	0	1750	1
1	0.017011	0.0	0.000460	0.364598	0.005057	0.0	0.612874	0	1	0	0	0	2175	1
2	0.043621	0.0	0.001091	0.565976	0.024718	0.0	0.364595	0	1	0	0	0	2751	1
3	0.039853	0.0	0.000613	0.009810	0.304721	0.0	0.645003	0	1	0	0	0	1631	0
4	0.016008	0.0	0.015492	0.027369	0.034599	0.0	0.906532	0	1	0	0	0	3873	0

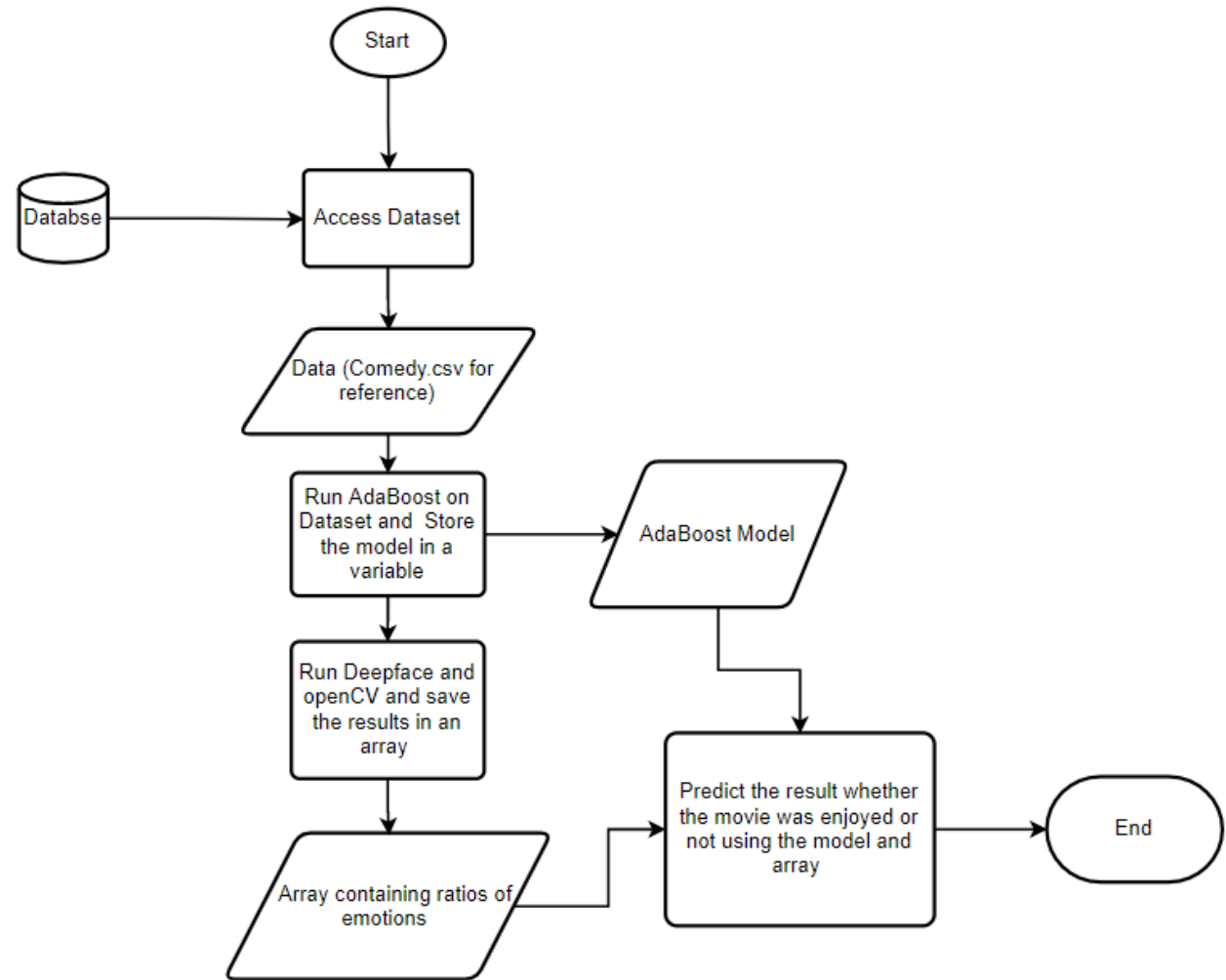


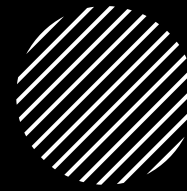
Structure of Dataset

- The separate CSV files will contain the column names as happy, angry, sad, neutral, surprise, disgust, fear and enjoyable.
- These columns (except for enjoyable) represent the fraction of frames that had the mentioned emotion as the output to the total frames analysed in the recording.
- The enjoyable column will either have the value 1 or 0. 1 meaning the movie/video was enjoyed by the user and 0 meaning the opposite
- The all.csv file is almost like the above csv files, except it also includes the column for every genre with the value 1 below the column, the movie belongs to.

Proposed Methodology

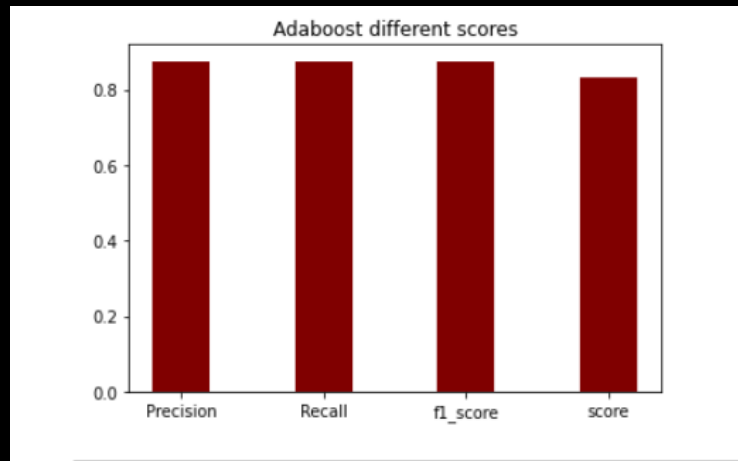
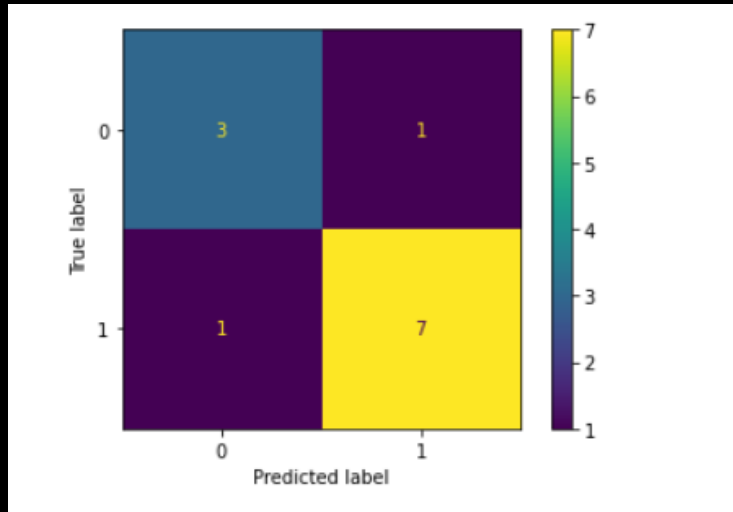
- Algorithm Used:
- **AdaBoost** is the algorithm that we have selected for our project
- AdaBoost is a part of supervised machine learning methodology
- The algorithm is of Classification type
- AdaBoost utilizes a node of just two leaves which is also referred to as a stump





AdaBoost Results:

- Training Score: 0.81250
- Testing Score: 0.8333334
- For Test Dataset: -
 - Precision: 0.875
 - Recall: 0.875
 - F1_Score: 0.875



Other Algorithms:

- Other algorithms such as “**Random Forest**” and “**Logistic Regression**” were also used to train the datasets. However, the results that we got from these models were not satisfactory, i.e., less accurate than AdaBoost.

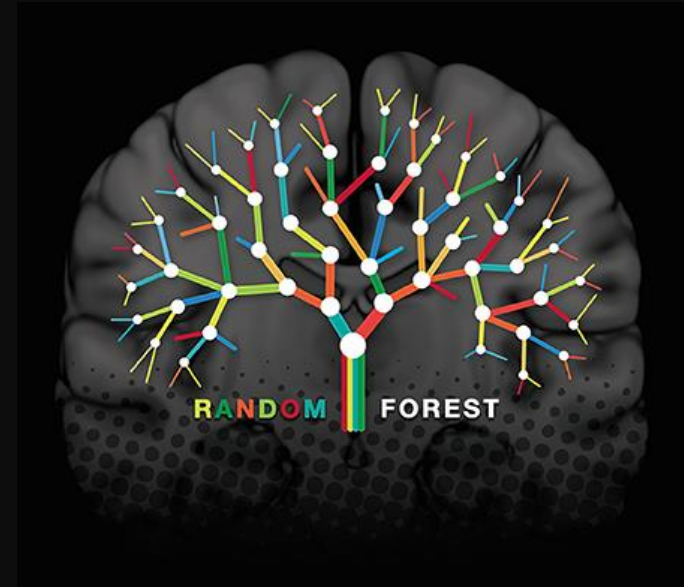
- Following are the results that we achieved from the mentioned algorithms:

1. Random Forest:

- Score for **Training** Dataset = 0.90562
- Score for **Testing** Dataset = 0.3655468

2. Logistic Regression:

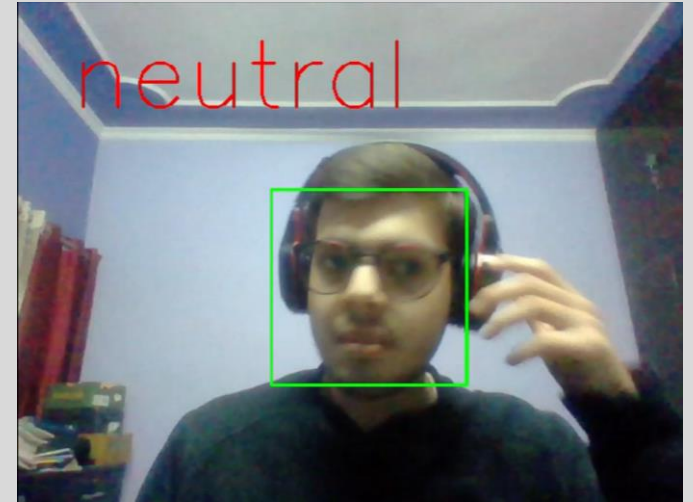
- Score for **Training** Dataset = 0.72916
- Score for **Testing** Dataset = 0.8333334



Example Result:

- Clip used for the prediction:
<https://youtu.be/UW8nEQ4hA3E>

Prediction: Movie was enjoyed



```
if not ret:
    break
cv2.imshow('asd', frame)
cv2.waitKey(1)
if cv2.getWindowProperty('asd', 4) < 1:
    break
cap.release()
cv2.destroyAllWindows()
ratios = [angry/total, disgust/total, fear/total, happy/total, sad/total, surprise/total, neutral/total, total]
types_arr=['action', 'comedy', 'drama', 'horror', 'romance']

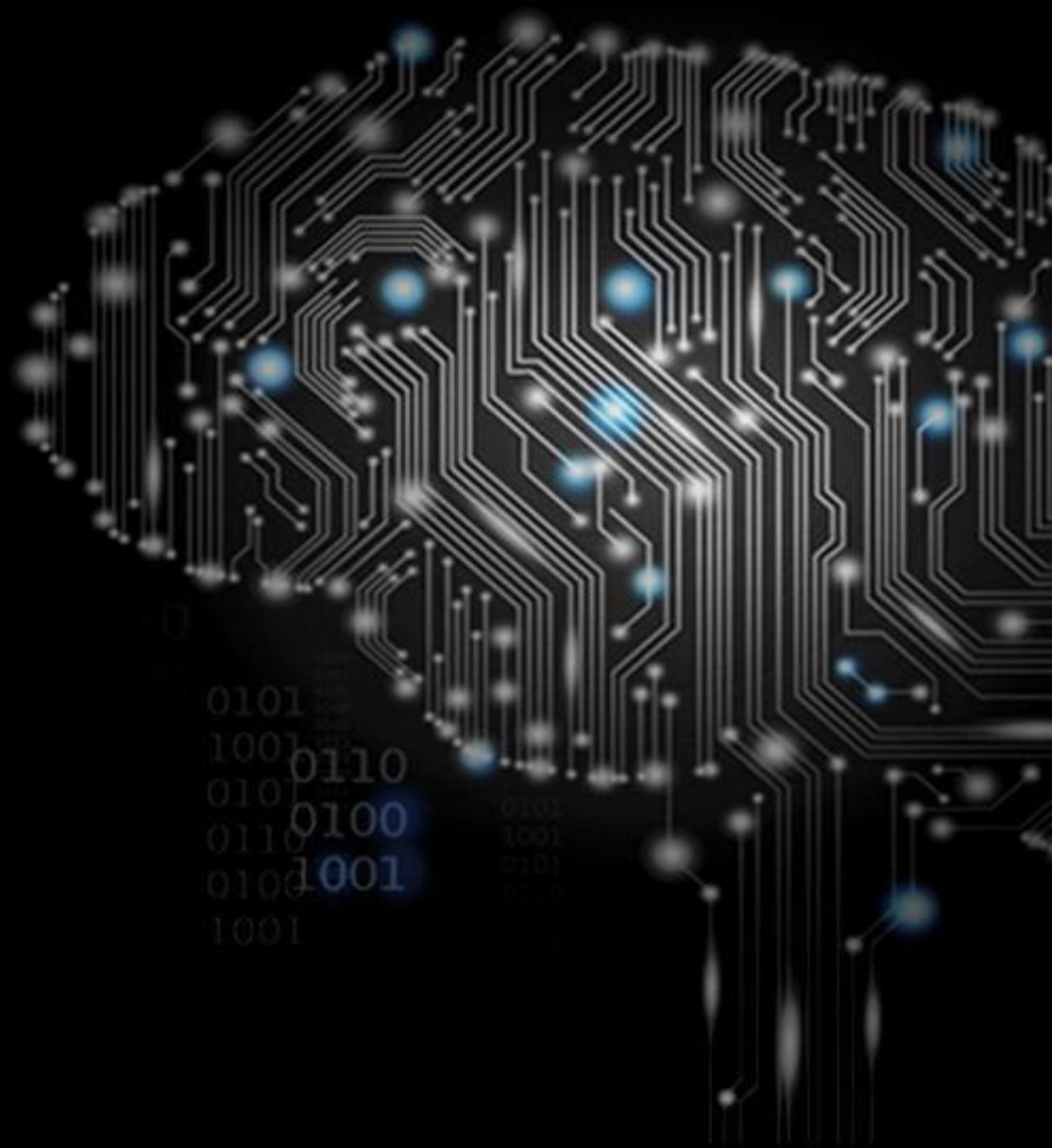
ratios.pop()

temp=[ratios]
yhat = clf.predict(temp)
if(yhat[0]==1):
    print('Prediction: You enjoyed the movie')
else:
    print('Prediction: You did not enjoy the movie')
```

Prediction: You enjoyed the movie

Conclusion

- In this project we proposed a novel solution to a major problem of inappropriate and paid movie reviews by using the facial expressions and AI as a solution.
- We created a database of the facial expressions for different videos and movies and trained it using AdaBoost to predict the results.
- The trained model was then used to predict the enjoyability factor using the camera and capturing the reactions.
- The video we watched was enjoyable and it predicted that correctly. Thus, the trained model can provide accurate feedback to anyone who is planning to watch a movie.



We would like to thank DR. Deepika Pantola for her guidance on the subject and suggestions on algorithms for our project

Facial Expression Analysis:

<https://www.youtube.com/channel/UCUv49cJ3xwr1NXxl9qIJ7kA/featured>

References & Acknowledgement

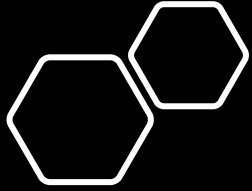


BENNETT
UNIVERSITY
TIMES OF INDIA GROUP



Thank You

Project Link:
<https://github.com/gaurangsh/MovieReviewSystem>



Linked-In Post Screenshot

[https://www.linkedin.com/feed/
update/urn:li:activity:687259534
3230472193/](https://www.linkedin.com/feed/update/urn:li:activity:6872595343230472193/)



Gaurang Shukla
Student at Bennett University
22m • 🌐

AIML works like magic !

Me and my team mates [Harshit Singh](#) and [Sumit Kumar](#) have built an automatic movie rating system. With the rise of different multimedia platforms, we have a ton of content available. However this has its own cost i.e., the increase in fake reviews/ratings. A lot of media houses reduce the legitimacy of reviews in order to put their movies in good light and gain views. This results in people wasting their time and money for a thing they did not want.

To solve this issue, our team has come up with a new review system that classifies movies as "enjoyable" and "not enjoyable" based on their genre. This system uses Machine Learning to rate movies based on the facial expressions of the audience.

After a movie is released, review based on the reactions of the initial audience is produced. This produced review is legitimate and the system is more reliable than other review systems.

We would like to thank [Dr. Sridhar Swaminathan](#), [Dr. Vipul Kumar Mishra](#) and [Dr. Deepika Pantola](#) for their help and guidance.

#machinelearning #team #bennettuniversity



	y	disgust	fear	happy	sad	surprise	neutral	tot
frame)	0	0.0	0.001060	0.508008	0.000540	0.000000	0.489741	1.71
property('sad', 0) < 1:	1	0.0	0.000460	0.384568	0.005057	0.000000	0.612874	21
	1	0.0	0.001091	0.666678	0.004718	0.000000	0.384596	27
	3	0.0	0.000613	0.006610	0.004721	0.000000	0.984003	16
disgust/total, fear/total, happy/total, sad/total, surprise/total, angry, drama, horror, romance	8	0.0	0.015402	0.027389	0.004699	0.000000	0.959532	36
	6	0.0	0.009651	0.320208	0.005382	0.000000	0.620844	371
	4	0.0	0.011254	0.540659	0.001509	0.000000	0.396374	311
ep)	8	0.0	0.039646	0.409562	0.085473	0.000000	0.427750	269
you enjoyed the movie)	9	0.0	0.015838	0.531671	0.041173	0.000000	0.279493	265
you did not enjoy the movie)	5	0.0	0.000000	0.046600	0.002258	0.000000	0.955451	81
of the movie	2	0.0	0.029026	0.475073	0.002490	0.000000	0.417809	138