EECS 445 Project
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Twerating: Pooling Pooling Twitter Tweets to Provide Accurate Movie Rating

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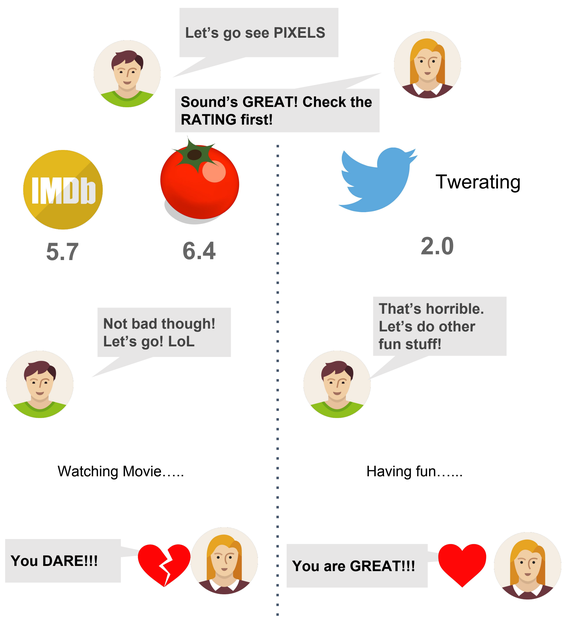
Overview



Movies have always been a popular form of entertainment. Audiences tend to get movie ratings from websites like IMDb and Rotten Tomatoes to decide whether a movie is worth watching. However, even the most popular movie only amass several hundred written reviews. Many of these ratings may have considerable bias due to the limited amount of reviews on those websites and the more opinionated reviewers that tend to write reviews. We are trying to create a more unbiased rating system based on a larger group of users by analyzing tweets on Twitter to do with movies.

Methods

In our process, we tested two types of vectors: raw vectors generated from token list frequencies and feature vectors produced by the Word2Vec. We tested these vectors on six different learning algorithms: Naive Bayes, KNN, Newton Linear Regression, Kernel Gaussian Regression, Linear SVM, RBF SVM, and SVM Ranking.

System Diagram

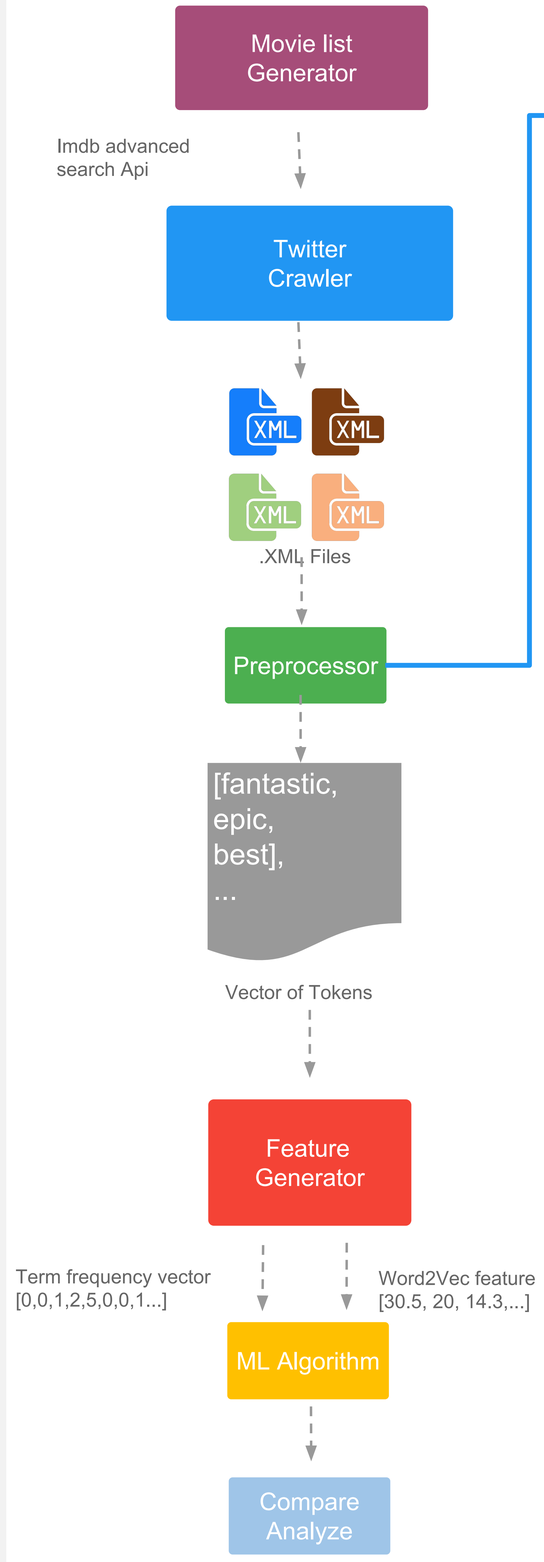


Figure 1. Flow diagram of Twerating's entire pipeline process for predicting movie ratings.

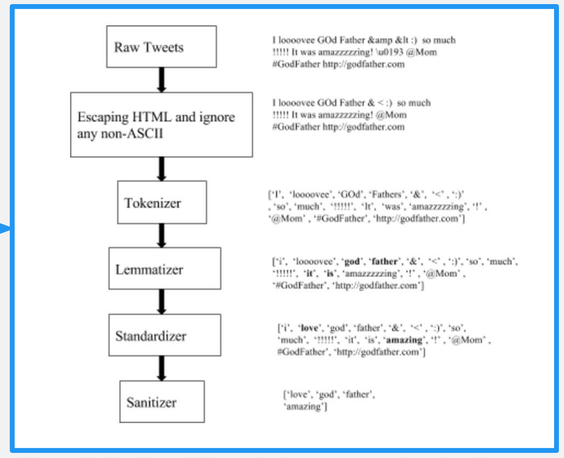


Figure 2. Pipeline of Twerating's preprocessing algorithm to acquire raw vectors.

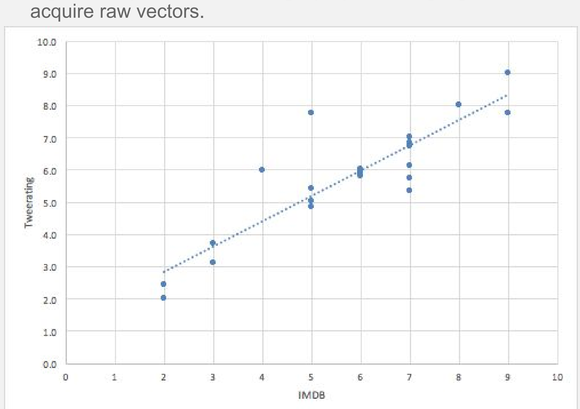


Figure 3. Scatter plot of Twerating's predicted movie ratings vs. IMDB's movie rating.

Movie Title	IMDB	Twerating
Battlefield Earth	2	2.0
Epic Movie	2	2.4
Catwoman	3	3.7
Jack and Jill	3	3.1
The Ghost Dimension	4	6.0
The Vatican Tapes	5	5.0
Freaks of Nature	5	5.4
My Nazi Legacy	5	7.7
Our Brand Is Crisis	5	4.9
War Room	6	5.8
The Last Witch Hunter	6	6.0
Miss You Already	6	6.0
Burnt	6	5.9
Hotel Transylvania 2	7	6.1
Goosebumps	7	5.7
Spectre	7	7.0
Brooklyn	7	6.8
Hunger Games	7	5.3
Trumbo	7	6.7
Bridge of Spies	8	8.0
The Peanuts Movie	8	8.0
Schindler's List	9	7.7
The Dark Knight	9	9.0

Table 1. Preview comparison of IMDB vs. Twerating on a sample set of films.

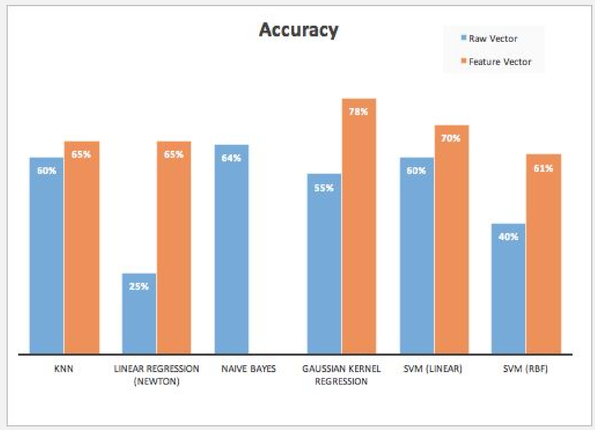


Figure 4. Bar graph comparing the accuracy performance of our six learning algorithms and two different vector types.

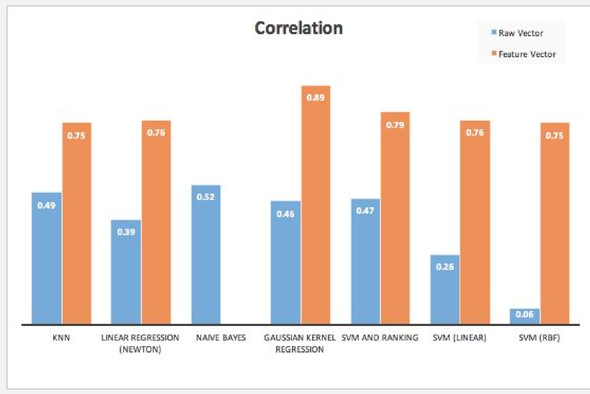


Figure 5. Bar graph comparing the correlation performance of our six learning algorithms and two different vector types.

Conclusion

After using a better representative feature vector, we managed to improve the rating accuracy from 64% to 78% and improve the correlation from 0.52 to 0.89. With our algorithm, users can find more correct and unbiased film scores than other movie rating websites like IMDB and Rotten Tomatoes.

Acknowledgement

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