

PROJECT REPORT OF  
RECOMMENDATION SYSTEM BASED ON CUSTOMER REVIEWS

by

Team United

Members:

Mani Shankar Reddy Nayakanti

Harshith Beeneedi

Uday Sai Krishna Yarlagadda

Sai Krishna

A Report submitted as per  
of the requirements for the Python and Deep Learning course of  
Master of Science  
in the  
School of Computing and Engineering  
University of Missouri Kansas city

## INTRODUCTION

The project report will introduce Recommendation system based on customer reviews using python NLTK and Django Framework. This is web application that will take product name as input and gives the customer the best product based on the ratings. In this project, the user first login to his/her account. If user does not exist, so he/she can create new account through new user options. After login into the system, the user can type the product name and our system will recommend them a best product based on the ratings. In order to log out of the system, user need to click on quit button. In this project a simple database is used to store customer login credentials. With this application customer will easily get to know the best product instead of thinking about which project to buy.

## PROBLEM STATEMENT

Customers now a days are spending hours to find the best product available in the segment they are willing to buy. This is due to the poor browsing experience provided by the ecommerce websites. By searching through these sites they are finding it more difficult and are prone to buy the product which is not durable and worthy to the penny they are spending. Customers require a system that would help them to recommend the best product based on the rating and review of the product given by customers who have already bought it.

## SOLUTION

To solve this problem Recommendation system based on customer review is developed. It uses unsupervised algorithm to find out the best review of the product and display it on the screen. By this way customer can benefit without spending hours for searching the product. Our goal for this project is to create one that is using the reviews of products, and ratings given and provide a best review to the customer.

## DATASET USED

Amazon reviews for sentiment analysis is used . This data set contains two columns i.e amazon reviews of the customers and their ratings. In the ratings column we have the classes \_\_label\_\_1 and \_\_label\_\_2, and there is only one class per row. \_\_label\_\_1 corresponds to 1- and 2-star reviews, and \_\_label\_\_2 corresponds to 4- and 5-star reviews. (3-star reviews i.e. reviews with neutral sentiment were not included in the original), The review titles, followed by ':' and a space, are prepended to the text. Most of the reviews are in English, but there are a few in other languages, like Spanish.

## PREPROCESSING

- First step is to change the raw data to columns format. For example we have data in this format.

```
This book made me want to read again. Very enjoyable.
__label__1 The Worst!: A complete waste of time. Typographical
errors, poor grammar, and a totally pathetic plot add up to
absolutely nothing. I'm embarrassed for this author and very
disappointed I actually paid for this book.
__label__2 Great book: This was a great book,I just could not put
it down,and could not read it fast enough. Boy what a book the
twist and turns in this just keeps you guessing and wanting to
know what is going to happen next. This book makes you fall in
love and can heat you up,it can also make you so angry. this
book can make you go throu several of your emotions. This is a
quick read romance. It is something that you will want to end
your day off with if you read at night.
__label__2 Great Read: I thought this book was brilliant, but yet
realistic. It showed me that to error is human. I loved the fact
that this writer showed the loving side of God and not the
revengeful side of him. I loved how it twisted and turned and I
could not put it down. I also loved The glass castle.
```

- We have converted this to two columns. One column having reviews and another column having ratings. We have coded Label 1 as 0 and Label 2 as 1 for our convenience and have placed two columns. Named text and label.

	A	B
1	text	label
2	Great CD: My lovely Pat has one of the GREAT voices of her generation. I have listened to this CD for YEARS and I still LOVE IT. When I'm in a good mood it makes me feel better. A bad mo	1
3	One of the best game music soundtracks - for a game I didn't really play: Despite the fact that I have only played a small portion of the game, the music I heard (plus the connection to Ch	1
4	works fine, but Maha Energy is better: Check out Maha Energy's website. Their Powerex MH-C204F charger works in 100 minutes for rapid charge, with option for slower charge (better f	1
5	Great for the non-audiophile: Reviewed quite a bit of the combo players and was hesitant due to unfavorable reviews and size of machines. I am weaning off my VHS collection, but don't	1
6	Unique Weird Orientalia from the 1930's: Exotic tales of the Orient from the 1930's. "Dr Shen Fu", a Weird Tales magazine reprint, is about the elixir of life that grants immortality at a pr	1
7	Great book for travelling Europe: I currently live in Europe, and this is the book I recommend for my visitors. It covers many countries, colour pictures, and is a nice starter for before you	1
8	TRULY MADE A DIFFERENCE!: I have been using this product for a couple years now. I started using it because my hair had gotten so dry from all the chemical treatments and relaxers. Thi	1
9	Simple, Durable, Fun game for all ages: This is an AWESOME game! Almost everyone know tic-tac-toe so it is EASY to learn and quick to play. You can't play just once! The twist is that yo	1
10	Review of Kelly Club for Toddlers: For the price of 7.99, this PC game is WELL worth it, great graphics, colorful and lots to do! My four year old daughter is in love with the many tasks to c	1
11	SOY UN APASIONADO DEL BOX: Y ESTE LIBRO ESTÁ ESPLÁNDIDO !Lo disfrutas, lo puedes usar como obra de consultaNos trae LAS HISTORIA DE LOS BOXEADORES MÁS BRILLANTES, DE LI	1
12	Some of the best fiddle playing I have heard in a long time: This is an excellent album with some great fiddle playing. Ryan is amazing to watch when he plays in person. You can feel the e	1
13	one of the last in the series to collect !: The magazine was in very good condition and had the usual high standard of articles and photos that Victoria magazine has come to represent. I h	1
14	Sony Hi8 Camcorder with 2.5 LCD: I believe I will be very happy with the camcorder. Its small,light and easy to handle.The LCD is clear and bright.Ease of operation.	1
15	works great: I bought this item to connect to a strobe light. unit functions well. not sure that it has all the range claimed, but i never really believe everything a manufacturer claims abou	1
16	wish i had gotten this sooner!: ive got a lamp in the corner of my room behind my desk thats a complete pain in the arse to turn on and off. ive been using this with the lamp for a mont	1
17	This is the all time best book!: This is the all time best book. She mentoins in the book how anyone can be a vampire, who knows. Well anyway I like the idea of having one soulmate and	1
18	Mary Ash: Can't believe I have never reviewed this book before. First read this back when I was 13. Like a lot of girls wanting the mysterious boyfriend and believed in soul-mates which d	1
19	Tha BOMB of a book!!: L.J. Smith is the best author in the whole world. I read this book a year ago but I can't stop reading it. It is beyond sweet. I love Ash.The entire Night World seris is	1
20	This book was a great book that i have read many times!:. This book was so great! I loved and read it so many times that i will soon have to buy a new copy because my last one fell apart	1
21	They'd watch it nonstop if I'd let them: apart from it arriving broken the first time, my kids are loving this DVD, which I alternate with the other I purchased to keep my own sanity. This D	1
22	Wonderful: I went online for information about Dockers Khaki pants. The size my husband wears are very hard to find in stores. I was very impressed with the selection I had and he was	1
23	Book of Chance: I had just finished reading 'The Food of Love' by Anthony Capella since I had nothing to do, but read. Mind you, reading is one of my favorite pastimes.I had recently bou	1
24	WeIB FOREVER!: This is a great CD!! I love WeIB Kreuz!! The anime is awesome! Its bout 4 guys (hhhooottt) who work at a flower shop, but at night they are the White Hunters (or Byce as	1
25	Real HTML for people who build sites for a living: This book is simply great! If you build sites for a living you probably struggle with books that trivialize HTML and present its syntax willy	1
26	Marriage has its good and bad moments: This is a tear-jerker mixed with humor. A lot of rough patches for this couple but don't let that scare you off because there are also a lot of good	1
27	Amazing...: love it...very touch.It's to bad that in the dvd description doesn't mention no subtitles	1
28	Leslie in a nutshell: Danelectro DJ-20C Rocky Road Spin Speaker Mini Effects Pedal, is an amazing little pedal!! use it with guitar, and keyboards.Using with Keyboards, organ mode(doesn'	1

- We have ignored languages other than English by using stop words.

```
stop_words = set(stopwords.words('english'))
```

- Converting all upper-case letters to lower- case letters.

## MODEL

For processing the data and finding the insights of the data we have used Sentiment intensity Analyzer model. NLTK already has a built-in, pretrained sentiment analyzer called VADER. As our model is sentiment based analyzer we have to find positive, negative scores based on the sentiment using polarity scores. We have taken the score greater than 0.05 as positive and less than that score as negative.

```
stop_words = set(stopwords.words('english'))
sid = SentimentIntensityAnalyzer()

def getReview(review):
    review_result = "none"
    review = review.lower()
    review = re.sub('[^A-Za-z]+', ' ', review)
    sentiment_dict = sid.polarity_scores(review.strip())
    compound = sentiment_dict['compound']
    if compound >= 0.05 :
        review_result = 'Positive'
    return review_result
```

## POST PROCESSING

If the product is not found in the dataset it will give the below Output.



Product Name	Recommended Best Review	Recommended Best Rating	Suggestion
transformers	Unable to get review for recommendation	0	No suggestion available

If the product is found in the data set it will give the below output.



Product Name	Recommended Best Review	Recommended Best Rating	Suggestion
movie	"There Was Me": Great movie! Stanley Kubrick is personally my favorite director after watching this movie. After I read the book I went out and bought the movie without seeing it. I think that the movie is as good as the book. The only downside to the whole movie is it did not add the additional chapter like in the book. But even the ending to the movie is great! Kubrick really scored big in this movie. Back then to make a movie as hard core as this one was crazy but he did it. This movie is so ahead of it's time. But it's my favorite movie of all time!	1	you have chosen best product

## APPLICATION

- The application we have created is a web application using Django framework and have used my sql database to store the login credentials given by user during registration process. These tables are created initially when the course management system is deployed.

create table register(username varchar(30) primary key,  
password varchar(30),  
contact varchar(12),  
email varchar(100),  
address varchar(40));

- The user data is captured and stored in the table as below.

```
mysql> select * from register;
+-----+-----+-----+-----+-----+
| username | password | contact | email | address |
+-----+-----+-----+-----+-----+
| manish | mani@2505 | 7989732930 | manishankar.nayakanti@gmail.com | 701 E Armour Blvd, 508,kansas city |
| manishankar | mani250595@ | 7989732930 | manishankar.nayakanti@gmail.com | 701 E Armour Blvd, 508,kansas city |
+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

- Once the user searches for the product name and clicks on submit button we will see the output with the output consisting of product review and rating.
- Our application uses sentiment analysis to learn the hidden emotions in the product and based on polarity scores it will recommend us the best product with the good reviews.

## REFERENCES

<https://www.kaggle.com/bittlingmayer/amazonreviews>

<https://realpython.com/python-nltk-sentiment-analysis/>

<https://www.fullstackpython.com/django.html>

<https://www.digitalocean.com/community/tutorials/build-your-first-python-and-django-application>

<https://medium.com/coders-camp/60-python-projects-with-source-code-919cd8a6e512>