Analysis Of Amazon Cell Phone Reviews

**1.Introduction**

**1.1Overview:**

This project aims at building a model to predict the helpfulness of the review and the rating based on the review text. Corpus-based and knowledge-based methods can be used to determine the semantic similarity of review text. We will be using Natural language processing to analyse the sentiment ( positive or a negative) of the given review . A sample web application is integrated to the model built.

**1.2 Purpose:**

The purpose of this project is to predict the rating and review of particular cell phone in the

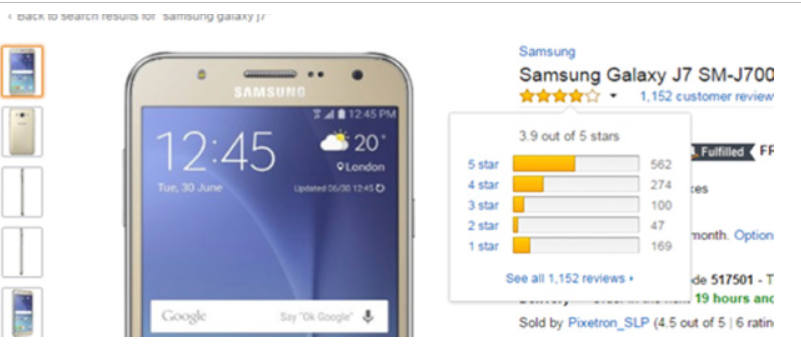
Amazon.So that the consumers read online reviews before they decide to purchase any Mobile phone from any e-commerce website.Online Mobile applications has revolutionised the way consumers purchase mobile phones online as these apps have all the information regarding any mobile phone at users finger tips. Amazon is one of the best mobile applications which is considered as a treasure trove of all mobile reviews, and their review system is accessible across all channels presenting reviews in an easy-to-use format. So,There should be a system which analyses thousands of reviews of unlocked mobile phones sold on Amazon.com to find insights with respect to reviews, ratings, price and their relationships.

**2.Literature Survey**

**2.1 Existing Problem:**

As we have considered Amazon as the source of data, the rating process which is used to rate the products in Amazon will lead to Flase\_Positive which in turn leads the customers to purchase the products by seeing the false rated products . For example, consider a sample product review which is given by a user in Amazon as shown below.

The below figure shows that the process of giving the ratings to products. As on when if the rating is in the form of stars we can understand that highest number of stars indicates that the product overall rating is good and the customer satisfies to the maximum extent. If it goes to the least number the customer completely disappointed with the product and it is not up to the range of customer's needs and the remaining rating process gives the satisfactory ranges of the moderate customers who ever partially satisfy with that product.



The overall product rating by customers

**2.2.Proposed Solution:**

By analysing all the existing review and rating processes we have observed that there is no clarity on the products rating and there is no feature level rating of the product which helps the customers to buy a product based on a specific feature. In our proposed approach we are trying to concentrate on the feature level rating process of the product by considering the reviews given by the users.

**3.Theoritical Analysis:**

**3.1 Block Diagram:**

Review

Predict

Detect

**3.2 Hardware/Software Designing:**

**Hardware:**

**Manufacturer:**Microsoft Corporation

**Processor:**Intel@Core i7-8650u [cpu@1.90GHz](mailto:cpu@1.90GHz) 2.11Ghz

**Installed memory(RAM):**16.0GB

**System Type:**64-bit Operating System,x64-based Processor

**Software:**

**Operating System:**Windows 10pro

**Anaconda version:**3.7 for windows

**Python version:**3.6

**Tensorflow version:**1.14.0 using anaconda

**Keras version:**2.2.4 using anaconda

**4.Experimental Investigations:**

Various experiments are applied on dataset which is based on Python,Python Web Frame Works,Natural Language Processing(NLP) concepts like removing Puncuations and numbers,converting each word into lower case,stemming,Adding input layers,output layers,hidden layers,optimizing the model all these experiments are performed in model classify the data set accurately

**PreProcessing:**

It refers to transformation applied to our data before feeding it to the algorithm.The messages have to be pre-processed for the removal of unwanted puntuations,stemming,converting to lower case etc..

**Stemming:**

Stemming is another pre-processing step that normalize sentences. Stemming is a way to account for the variations of words and sentences which often have a same meaning; furthermore, it will help us shorten the sentences and shorten our lookup.

Stemming helps reduce a word to its stem form. It often makes sense to treat related words in the same way. It removes suffices, like “ing”, “ly”, “s”, etc. by a simple rule-based approach. It reduces the corpus of words but often the actual words get neglected.

**5.FLOW CHART**

Training Data

Data Preprocessing

Feature Engineering

Model Evaluation

eEvaluation

Model Training

Review checking

Input Processing

Prediction Outputs

Model

**6.Result:**

Various experiments are performed to evaluate the performance of our proposed Analysis of Amazon Phone review. Initially we have selected features on the basis of behavior of analysing the rating and review of previous customers who buyed the phone earlier through Amazon and extracted these features from the dataset to get the feature vector.So that the consumer can easily recognize the usage of the phone.

**7.ADVANTAGES and DISADVANTAGES:**

**ADVANTAGES:**

**1.** **A Larger Market**

Amazon Cell Phone Reviews allows you to reach customers all over the country and around the world. Your customers can make a purchase anywhere and anytime, especially more people are getting used to shopping on their mobile devices.

**2. Customer Insights Through Tracking And Analytics**

Whether you're sending visitors to your Amazon website through SEO, PPC ads or a good old postcard, there is a way to track your traffic and customers' entire user journey to get insights into keywords, user experience, marketing message, pricing strategy, and more.

**3. Fast Response To Consumer Trends And Market Demand**

The streamlined logistics, especially for merchants who do "drop ship," allow businesses to respond to market and Amazon trends and consumer demands in a nimble manner. Merchants can also create promotions and deals on the fly to attract customers and generate more sales.

**4. Lower Cost**

With the advance in Amazon platform technologies it has become very easy and affordable to set up and maintain an Amazon store with a low overhead. Merchants no longer have to spend a large budget on TV ads or billboard, nor worry about the expense for personnel and real estate.

**5. More Opportunities To "Sell"**

Merchants can only provide a limited amount of information on a product in a physical store. On the other hand, Amazon websites allow the space to include more information such as demo videos, reviews, and customer testimonials to help increase conversion.

**DISADVANTAGES:**

**1. Lack Of Personal Touch**

Some consumers value the personal touch they get from visiting a physical store and interacting with sales associates. Such personal touch is particularly important for businesses selling high-end products as customers not only want to buy the merchandise but also have a great experience during the process.

**2. Lack Of Tactile Experience**

No matter how well a video is made, consumers still can't touch and feel a product. Not to mention, it's not an easy feat to deliver a brand experience, which could often include the sense of touch, smell, taste, and sound, through the two-dimensionality of a screen.

**3. Price And Product Comparison**

With online shopping, consumers can compare many products and find the lowest price. This forces many merchants to compete on price and reduce their profit margin.

**4. Need For Internet Access**

This is pretty obvious, but don't forget that your customers do need Internet access before they can purchase from you! Since many eCommerce platforms have features and functionalities that require high-speed Internet access for an optimal customer experience, there's a chance you're excluding visitors who have slow connections.

**5. Credit Card Fraud**

Credit card fraud is a real and growing problem for online businesses. It can lead to chargebacks that result in the loss of revenue, penalties, and bad reputation.

**8.APPLICATIONS:**

Retail and wholesale:

Amazon Cell Phone Review has a number of applications in retail and wholesale.

E-retailing or on-line retailing is the selling of goods from Business-to-Consumer through electronic stores that are designed using the electronic catalog and shopping cart model.

Cybermall is a single Website that offers different products and services at one Internet location. It attracts the customer and the seller into one virtual space through a Web browser.

Marketing:

Another application Amazon Cell Phone Review is Marketing.

Data collection about customer behavior, preferences, needs and buying patterns is possible through Web and Amazon. This helps marketing activities such as price fixation, negotiation, product feature enhancement and relationship with the customer.

Finance:

Financial companies are using Amazon to a large extent.

Another application of Amazon is on-line stock trading. Many Websites provide access to news, charts, information about company profile and analyst rating on the stocks.

Manufacturing:

Amazon is also used in the supply chain operations of a company.

Some companies form an electronic exchange by providing together buy and sell goods, trade market information and run back office information such as inventory control.

This speeds up the flow of raw material and finished goods among the members of the business community. Various issues related to the strategic and competitive issues limit the implementation of the business models.

**9.Conclusion:**

Ecommerce usage is increasing day by day. It overpasses all the supply chains to reach to the consumers through it innovative e-commerce approach. This allows the company to have a control over its distribution channel and so is able to cut down the prices of its products.So that consumers can buy the product at low cost and can experience better.

So the rating can be increased and it may have positive review of the product so the consumer attracts to buy a particular phone.So the consumer can give good feedback for review and good rating.

**10.Future Scope:**

Amazon business is the best option available for the people to build a better business world for insuring success in future rather than doing a traditional mode of business. For any business person, to have an e-commerce business is added advantage for their business. Several factors for the importance of Amazon business:-

**Convenience**

Sometimes, the question arises that why do you use Amazon website for online shopping? The most prominent answer to this question is convenience. One person can shop, buy and sell products while sitting at home at anytime.

Round the clock services

Amazon provides us round the clock services at all times even in midnight. So the customers do not require visiting a physical market if they need something during the night. It is the most convenient option for the people who are usually busy with their working schedules. So it helps you to be available for your customer 24×7.

Wide Platform

Amazon brings a wide range of customers across the nation or globe to your business. Therefore, it is a wise choice to choose an Amazon platform to cross the geographical barriers for your business.

Business partner

Amazon is directly link to your business promotions, as it is the age of digital media. Making your business available online is crucial to your business development such as, highly convenience, wide exposure, global customer, easy to run, etc. and it will help in creating a strong & global brand image for your business.

Lesser cost

If the inventory management of goods and services is an automated process then not only there will be a reduction in costs, but also in risk. Also having an Amazon business is much more cost effective than a physical store as it saves your extra expenses like rent, electricity, etc.,

**APPENDIX**

**1.importing libraries**

import re

import pandas as pd

import numpy as np

**2.importing dataset**

dataset=pd.read\_csv('Reviews.csv')

**3.Pre-processing**

 Remove Punctuations, Numbers

 Convert each word into its lower case

 Stemming

 Splitting Data into Training and Test set

**4**.**library to clean the text**

import re

**5.natural language tool kit library**

import nltk

**6.Library used to remove stop words**

nltk.download('stopwords')

from nltk.corpus import stopwords

**7.Library used for stemming**

from nltk.stem.porter import PorterStemmer

ps = PorterStemmer()

data = [ ]

**8.Replacing punctuations and numbers using re library**

temp=dataset[“temp”][0]

temp=re.sub('[^a-zA-Z]',' ',x[i])

**9.Converting declared variable into lower case**

temp=temp.lower()

**10.Split the variable and apply stemming**

temp=temp.split()

temp=[wordnet.lemmatize(word) for word in temp if not word in set(stopwords.words('english'))]

temp=' '.join(temp)

corpus.append(temp)

**11.Creating the bag of words model to extract max features**

from sklearn.feature\_extraction.text import CountVectorizer

cv=CountVectorizer(max\_features= 100)

z=cv.fit\_transform(corpus).toarray()

**12.import libraries:**

import pickle

pickle.dump(cv,open('count\_vec.pkl','wb'))

**12.Splitting data into training and test set**

from sklearn.model\_selection import train\_test\_split

x\_train,x\_test,y\_train,y\_test=train\_test\_split(z,y,test\_size=0.33)

**13.import libraries which uses tensor flow as backend**

import keras

**14.library to initialize the model**

import keras

from keras.models import Sequential

from keras.layers import Dense

**15.Initializing the model**

model=Sequential()

**17.Adding hidden layers,input layer**

model.add(Dense(input\_dim=100,init="random\_uniform",activation="relu",output\_dim=30))

model.add(Dense(init="random\_uniform",activation="relu",output\_dim=25))

**18.Adding an output layer**

model.add(Dense(init="random\_uniform",activation="sigmoid",output\_dim=1))

**18.Configuring the learning process**

model.compile(optimizer="adam",loss="binary\_crossentropy",metrics=["accuracy"])

**19.Training the model**

model.fit(x\_train,y\_train,batch\_size=32,epochs=50)

**20.Saving model as smsmodel.h5**

model.save('phone.h5')

**21.Prediction**

from keras.models import load\_model

import numpy as np

import pickle

model=load\_model('phone.h5')

corpus=[]

with open('count\_vec.pkl','rb') as file:

cv=pickle.load(file)

inp = "the phone is bad"

x=cv.transform([inp])

y=model.predict(x)

if(y>0.5):

print('good review')

else:

print('bad review')

**app.py:**

from flask import render\_template, Flask, request,url\_for

from keras.models import load\_model

import pickle

import tensorflow as tf

graph = tf.get\_default\_graph()

with open(r'count\_vec.pkl','rb') as file:

cv=pickle.load(file)

cla = load\_model('phone.h5')

cla.compile(optimizer='adam',loss='binary\_crossentropy')

app = Flask(\_\_name\_\_)

@app.route('/')

def index():

return render\_template('index.html')

@app.route('/predict')

@app.route('/', methods = ['GET','POST'])

def page2():

if request.method == 'GET':

img\_url = url\_for('static',filename = 'style/123.jpg')

return render\_template('index.html',url=img\_url)

if request.method == 'POST':

topic = request.form['tweet']

print("Hey " +topic)

topic=cv.transform([topic])

print("\n"+str(topic.shape)+"\n")

with graph.as\_default():

y\_pred = cla.predict(topic)

print("pred is "+str(y\_pred))

if(y\_pred > 0.5):

img\_url = url\_for('static',filename = 'style/1.jpg')

topic = "Positive Review"

elif(y\_pred < 0.5):

img\_url = url\_for('static',filename = 'style/2.jpg')

topic = "Negative Review"

return topic

if \_\_name\_\_ == '\_\_main\_\_':

app.run(host = 'localhost', debug = False , threaded = False)

**HTML code:**

**index.html**

%%HTML

<html>

<head>

<title>review amazon</title>

<style>

body {background-color:#2E86C1 ;

background-image: linear-gradient(-90deg,#2E86C1 ,#C02BB4 );}

h1{color:white;

font-size:48px;

float:left;

margin-left:60px;

text-decoration-line: underline;

text-decoration-style: solid;}

p{color:white;

font-size:20px;

}

input[type=text] {

border: 4px solid black;

border-radius: 20px;

}

body{

border: 8px solid black;

border-radius: 20px;

}

</style>

</head>

<body>

<form action="/login" method="POST">

<div class="home">

<h1>review amazon</h1>

<br><br><br>

<div class="image">

</div>

<center>

<div class="login">

<p><input type="text" name="review" required="required"

style="height:200px;width:320px;"/></p>

<p>Enter the text message</p>

<div class="button">

<p><button type="submit">Predict</button>

</div>

</form>

<div>

<b><font color="black" size='10'></font></b>

</center>

</body>

</html>

return review