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Assignment 5 and Assignment 10

* **Problem statement:**

5. Content analysis (text, emotions, image, audio, video) based social media analytics: Location analysis, Trend analysis, Hashtag popularity analysis, sentiment analysis for a given dataset, user engagement analysis - topic, Issue, Trend, sentiment (opinion analysis, audio, video, image analytics.

10. Develop social media text analytics model for improving product by analysing customers reviews/comments.

* **Theory:**

5. Content analysis is a research tool used to determine the presence of certain words, themes, or concepts within some given qualitative data.

Example: Researchers can evaluate language used within a news article to search for bias or partiality. Researchers can then make inferences about the messages within the texts, the writer(s), the audience, and even the culture and time of the surrounding text.

Use of content analysis:
→ Identify the intentions, focus or communication trends of an individual, group or institution.
→ Describe attitudinal & behavioral responses to communication
→ Determine the psychological or emotional state of persons

or groups.
→ Reveal international differences in communication content.
→ Reveal patterns in communication content.
→ Pre-test & improve an intervention or survey prior to launch.

- Sentiment analysis:
→ Also known as opinion mining, is an approach to NLP that identifies the emotional tone behind a body of text.
→ It involves use of data mining, machine learning (ML), and artificial intelligence (AI) to mine text for sentiment & subjective information.
→ Rule-based systems perform sentiment analysis based on pre-defined, lexicon-based rules while automatic systems learn from data with ML techniques.

- Trend analysis:
→ It is a statistical technique used to identify & analyse patterns & changes in data over time.
→ involves analysing datasets to determine the direction of the trend and the rate at which it is changing.

- Audio, video and Image Analysis
→ used to extract useful information & insights from digital media.
→ processing & analysing visual content to extract features such as pitch, volume, tempo & timbre.
→ This can be used in speech recognition, music transcription & audio compression.

10. Steps for social media text analytics is as follows:

i) **Gather data:** Collect customer reviews & comments from social media platforms like Twitter, Facebook & Instagram. You can use web scraping tools.

ii) **Pre-process the data:** Clean & preprocess the data to remove any irrelevant or duplicate information. This may include removing punctuation, stopwords & stemming the words.

iii) **Perform sentiment analysis:** Use NLP techniques like sentiment analysis to determine the overall sentiment of the reviews.

iv) **Identify key themes:** Use topic modelling technique such as Latent Dirichlet Allocation (LDA) to identify key themes & topics in the reviews.

v) **Perform Text Classification:** Use ML algorithms to classify reviews based on their topic & sentiments.

vi) **Generate Reports:** Use visualisation tools to create reports that highlight key insights from the analysis. The reports should be easily understandable & provide actionable insights.

vii) **Take action:** Use insights gained from the analysis to make improvements to your product or servi

```
In [ ]:  import pandas as pd
         import numpy as np
         import ssl
         ssl._create_default_https_context = ssl._create_unverified_context
         import nltk
         nltk.download('vader_lexicon')
         import matplotlib.pyplot as plt
         from nltk.sentiment.vader import SentimentIntensityAnalyzer
```

```
In [ ]:  df = pd.read_csv('Womens Clothing E-Commerce Reviews.csv')
```

```
In [ ]:  df.head()
```

Out[ ]:

	Clothing ID	Rating	Review Text
0	767	4	Absolutely wonderful - silky and sexy and comf...
1	1080	5	Love this dress! it's sooo pretty. i happene...
2	1077	3	I had such high hopes for this dress and reall...
3	1049	5	I love, love, love this jumpsuit. it's fun, fl...
4	847	5	This shirt is very flattering to all due to th...

```
In [ ]:  sia = SentimentIntensityAnalyzer()
         df['score'] = df['Review Text'].apply(lambda comments: sia.polarity_scores(str(c
         df['Sentiment'] = df['score'].apply(lambda s: 'Positive' if s > 0 else ('Neutral
         df.head()
```

Out[ ]:

	Clothing ID	Rating	Review Text	score	Sentiment
0	767	4	Absolutely wonderful - silky and sexy and comf...	0.8932	Positive
1	1080	5	Love this dress! it's sooo pretty. i happene...	0.9729	Positive
2	1077	3	I had such high hopes for this dress and reall...	0.9427	Positive
3	1049	5	I love, love, love this jumpsuit. it's fun, fl...	0.5727	Positive
4	847	5	This shirt is very flattering to all due to th...	0.9291	Positive

```
In [ ]:  sentiment_counts = df['Sentiment'].value_counts()
         df.head(20)
```

Out[ ]:

	Clothing ID	Rating	Review Text	score	Sentiment
0	767	4	Absolutely wonderful - silky and sexy and comf...	0.8932	Positive
1	1080	5	Love this dress! it's sooo pretty. i happene...	0.9729	Positive
2	1077	3	I had such high hopes for this dress and reall...	0.9427	Positive
3	1049	5	I love, love, love this jumpsuit. it's fun, fl...	0.5727	Positive
4	847	5	This shirt is very flattering to all due to th...	0.9291	Positive
5	1080	2	I love tracy reese dresses, but this one is no...	0.9419	Positive
6	858	5	I aded this in my basket at hte last mintue to...	0.8004	Positive
7	858	4	I ordered this in carbon for store pick up, an...	-0.0909	Negative
8	1077	5	I love this dress. i usually get an xs but it ...	0.7175	Positive
9	1077	5	I'm 5"5' and 125 lbs. i ordered the s petite t...	-0.3724	Negative
10	1077	3	Dress runs small esp where the zipper area run...	0.3578	Positive
11	1095	5	This dress is perfection! so pretty and flatte...	0.8927	Positive
12	1095	5	More and more i find myself reliant on the rev...	0.5520	Positive
13	767	5	Bought the black xs to go under the larkspur m...	0.8036	Positive
14	1077	3	This is a nice choice for holiday gatherings. ...	0.8176	Positive
15	1065	4	I took these out of the package and wanted the...	0.9743	Positive
16	1065	3	Material and color is nice. the leg opening i...	0.5773	Positive
17	853	5	Took a chance on this blouse and so glad i did...	0.9782	Positive
18	1120	5	A flattering, super cozy coat. will work well...	0.9360	Positive
19	1077	5	I love the look and feel of this tulle dress. ...	0.9345	Positive

In [ ]:
```python
pd.set_option('display.max_colwidth', None)

# Filter DataFrame for negative sentiment and print 'Review Text' column
negative_reviews = df[df['Sentiment'] == 'Negative']['Review Text']
print(negative_reviews)
```

7   I ordered this in carbon for store pick up, and had a ton of stuff (as always) to try on and used this top to pair (skirts and pants). everything went with it. the color is really nice charcoal with shimmer, and went well with pencil skirts, flare pants, etc. my only compaint is it is a bit big, s leeves are long and it doesn't go in petite. also a bit loose for me, but no xx s... so i kept it and wil ldecide later since the light color is already sold out in hte smallest size...

9

I'm 5"5' and 125 lbs. i ordered the s petite to make sure the length wasn't too l ong. i typically wear an xs regular in retailer dresses. if you're less busty (34 b cup or smaller), a s petite will fit you perfectly (snug, but not tight). i lov e that i could dress it up for a party, or down for work. i love that the tulle i s longer then the fabric underneath.

61   3 tags sewn in, 2 small (about 1'' long) and 1 huge (abo ut 2'' x 3''). very itchy so i cut them out. then the thread left behind was plas ticy and even more itchy! how can you make an intimates item with such itchy tag s? not comfortable at all! also - i love bralettes and wear them all the time inc luding to work. i am a b cup. however, this one is so thin and flimsy that it giv es no support even to a b cup - so for me this would only be a lounging bralette - if it wasn't so itchy!

77

The zipper broke on this piece the first time i wore it. very disappointing since i love the design. i'm actually going to try to replace the zipper myself with so mething stronger, but annoying that it's come to that.

88

Really cute piece, but it's huge. i ordered an xxs petite and it was unfortunatel y extremely wide and not flattering. returning.

...

23436

I'm 5'6" and it hits me at mid-thigh. the top (black/camel version) is sheer enou gh to need a cami. the waist is quite high. not flattering for me--the empire wai st makes me look a bit pregnant--plus i don't want to deal with having to wear a cami.

23449

I tried these on because the color is really pretty and fun, and who donse't want a pair of comfy/cute pants... but they looked awful on my muscular thighs... i do n't think the cut will be falttering on 99% of the population. also, not as comfo rtable as they looked, the crotch seemed a little "low" on me, though the pants w ere in the correct size.

23462

The pattern of this skirt is adorable and looks better in person but the fabric i snt the best. it feels like an elastic fabric and is way to volumous. overall not my favorite.

23477   I'm so impressed with the beautiful color combinations and embroidery bu t disappointed in the rayon fabric used, especially at this price point. the sle eveless sheer blue outer dress is a flowy swing silhouette that retains many wrin kles. i have thick shoulders and upper arms, so the armholes cut into my armpit s. the silky rayon liner is a blush rose color with adjustable spaghetti straps. the slip has no stretch and feels a bit tight on my chest. i ordered size medium petite and my stats a

23478

I was surprised at the positive reviews for this product. its terrible! it cuts y ou in a weird place to make you look wide. the skirt is also not like the pictur e. its darker and heavier. the material isnt great. i had to return.

Name: Review Text, Length: 1434, dtype: object

```
In [ ]: plt.pie(sentiment_counts, labels=sentiment_counts.index, autopct='%1.1f%%')
        plt.show()
```