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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 techniques 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 topics & 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 service.

sma-exp-10

April 7, 2024

```
[5]: import nltk
     nltk.download('vader_lexicon')
```

```
[nltk_data] Downloading package vader_lexicon to
[nltk_data]     C:\Users\etash\AppData\Roaming\nltk_data…
```

```
[5]: True
```

```
[6]: import pandas as pd
     from nltk.sentiment.vader import SentimentIntensityAnalyzer

     # Load CSV file
     df = pd.read_csv("Womens Clothing E-Commerce Reviews.csv")

     # Initialize sentiment analyzer
     sid = SentimentIntensityAnalyzer()

     # Function to perform sentiment analysis
     def analyze_sentiment(text):
         if isinstance(text, float):
             return 'Neutral'  # Return 'Neutral' for float values
         sentiment_score = sid.polarity_scores(text)
         if sentiment_score['compound'] >= 0.05:
             return 'Positive'
         elif sentiment_score['compound'] <= -0.05:
             return 'Negative'
         else:
             return 'Neutral'


     # Apply sentiment analysis to each review
     df['Sentiment'] = df['Review Text'].apply(analyze_sentiment)

     # Split DataFrame into positive and negative reviews
     positive_reviews = df[df['Sentiment'] == 'Positive']
     negative_reviews = df[df['Sentiment'] == 'Negative']

     # Combine negative reviews text
```

```python
negative_text = ". ".join(negative_reviews['Review Text'])

# Define keywords and associated feedback for negative sentiment
owner_feedback = {
    'size': "Some customers have reported issues regarding product sizing. It
↪might be beneficial to review the size chart for accuracy and consider
↪offering more detailed size information.",
    'quality': "There have been concerns raised about product quality. It's
↪essential to investigate these matters thoroughly and consider reassessing
↪the quality control process.",
    'shipping': "There have been complaints about shipping delays. It could be
↪beneficial to streamline the shipping process and explore options for faster
↪delivery.",
    'customer service': "Feedback indicates dissatisfaction with the customer
↪service experience. Consider revising customer service procedures to ensure
↪prompt and helpful assistance.",
    'length': "There have been complaints regarding product length accuracy.
↪Reviewing and updating product descriptions for accuracy could help
↪alleviate this issue.",
    'not comfortable': "Some customers have mentioned discomfort with the
↪product. Exploring ways to enhance comfort or offering alternative options
↪may improve customer satisfaction.",
    'huge': "Some customers have reported issues with the product size being
↪larger than expected. It might be beneficial to provide clearer size
↪guidance to avoid such discrepancies.",
    'broke': "Concerns have been raised about product durability, with reports
↪of items breaking. Evaluating product durability and considering
↪improvements or replacements may be necessary.",
    'uncomfortable': "Some customers have expressed discomfort with the product.
↪ Investigating the root causes of discomfort and exploring design or
↪material changes may be beneficial.",
    'small': "There have been complaints about the product size being smaller
↪than expected. Providing clearer size guidance and offering options for
↪different body types may help address this issue.",
    'poor': "Feedback suggests that some customers have had a poor experience
↪with our product. Investigating the reasons behind this and implementing
↪improvements may be necessary.",
    'defective': "Concerns have been raised about product defects. Implementing
↪stricter quality control measures and offering easy replacements or refunds
↪may help address this issue.",
    'disappointed': "Some customers have expressed disappointment with our
↪product. Understanding the reasons behind this and taking steps to improve
↪product quality or features may be necessary.",
    'wrong size': "There have been reports of customers receiving the wrong
↪size. Reviewing order processing procedures and improving accuracy may help
↪prevent such issues in the future.",
```

```
    'unsatisfactory': "Feedback indicates that some customers found our product␣
↪unsatisfactory. Investigating the reasons for dissatisfaction and␣
↪implementing improvements may be necessary.",
    'cheap': "Some customers have expressed concerns about the perceived␣
↪quality of our product. Assessing product materials and making necessary␣
↪improvements may help address this perception.",
    'terrible': "There have been reports of customers having a terrible␣
↪experience with our product. Understanding the root causes of␣
↪dissatisfaction and taking corrective actions may be necessary.",
    'displeased': "Feedback suggests that some customers were displeased with␣
↪our product. Investigating the reasons for dissatisfaction and implementing␣
↪improvements may help address this.",
    'unhappy': "Some customers have expressed unhappiness with our product.␣
↪Understanding the reasons for dissatisfaction and taking steps to improve␣
↪may be necessary.",
    'unsatisfied': "There have been reports of customers being unsatisfied with␣
↪our product. Investigating the reasons for dissatisfaction and implementing␣
↪improvements may help address this.",
    'awful': "Some customers have described their experience with our product␣
↪as awful. Understanding the reasons behind this and taking steps to improve␣
↪product quality or features may be necessary.",
    'unacceptable': "Feedback indicates that some customers found aspects of␣
↪our product unacceptable. Investigating the specific concerns and taking␣
↪corrective actions may be necessary.",
    'shabby': "Some customers have described our product as shabby.␣
↪Understanding the reasons behind this perception and making necessary␣
↪improvements may be necessary.",
    'lousy': "There have been reports of customers having a lousy experience␣
↪with our product. Investigating the reasons behind this and taking steps to␣
↪improve may be necessary.",
    'inferior': "Feedback suggests that some customers found our product␣
↪inferior in quality. Understanding the specific concerns and taking␣
↪corrective actions may be necessary.",
    'faulty': "Concerns have been raised about product faults. Implementing␣
↪stricter quality control measures and offering easy replacements or refunds␣
↪may help address this issue.",
    'bad': "Some customers have had a bad experience with our product.␣
↪Investigating the reasons behind this and taking corrective actions may be␣
↪necessary.",
    'disappointing': "There have been reports of customers finding our product␣
↪disappointing. Understanding the reasons for dissatisfaction and␣
↪implementing improvements may be necessary.",
    'disgusting': "Some customers have described our product as disgusting.␣
↪Understanding the specific concerns and taking corrective actions may be␣
↪necessary.",
```

```
  'miserable': "There have been reports of customers feeling miserable due to␣
↪our product. Investigating the reasons for dissatisfaction and implementing␣
↪improvements may be necessary.",
  'troublesome': "Some customers have found our product troublesome.␣
↪Understanding the specific concerns and taking corrective actions may be␣
↪necessary.",
  'unsatisfying': "There have been reports of customers finding our product␣
↪unsatisfying. Investigating the reasons for dissatisfaction and implementing␣
↪improvements may be necessary.",
  'unsuitable': "Some customers have found our product unsuitable for their␣
↪needs. Understanding the specific concerns and taking corrective actions may␣
↪be necessary.",
  'horrific': "There have been reports of customers having a horrific␣
↪experience with our product. Investigating the reasons behind this and␣
↪taking steps to improve may be necessary.",
  'atrocious': "Some customers have described our product as atrocious.␣
↪Understanding the specific concerns and taking corrective actions may be␣
↪necessary.",
  'regrettable': "There have been reports of customers feeling regrettable␣
↪about our product. Investigating the reasons for dissatisfaction and␣
↪implementing improvements may be necessary.",
  'unacceptable': "Feedback indicates that some customers found aspects of␣
↪our product unacceptable. Investigating the specific concerns and taking␣
↪corrective actions may be necessary.",
  'annoying': "Some customers have found our product annoying. Understanding␣
↪the specific concerns and taking corrective actions may be necessary.",
  'unsatisfactory': "There have been reports of customers finding our product␣
↪unsatisfactory. Investigating the reasons for dissatisfaction and␣
↪implementing improvements may be necessary.",
  'horrible': "Some customers have had a horrible experience with our product.
↪ Understanding the reasons behind this and taking corrective actions may be␣
↪necessary.",
  'awful': "Some customers have described their experience with our product␣
↪as awful. Understanding the reasons behind this and taking steps to improve␣
↪product quality or features may be necessary.",
  'faulty': "Concerns have been raised about product faults. Implementing␣
↪stricter quality control measures and offering easy replacements or refunds␣
↪may help address this issue.",
  'deplorable': "Some customers have found aspects of our product deplorable.␣
↪Understanding the specific concerns and taking corrective actions may be␣
↪necessary.",
  'annoyance': "There have been reports of customers feeling annoyed by our␣
↪product. Investigating the reasons for dissatisfaction and implementing␣
↪improvements may be necessary.",
```

```python
        'substandard': "Some customers have described our product as substandard. ␣
    ↪Understanding the specific concerns and taking corrective actions may be␣
    ↪necessary.",
        'unpleasant': "There have been reports of customers having an unpleasant␣
    ↪experience with our product. Investigating the reasons for dissatisfaction␣
    ↪and implementing improvements may be necessary.",
        'unreliable': "Some customers have described our product as unreliable. ␣
    ↪Understanding the specific concerns and taking corrective actions may be␣
    ↪necessary."
}




# Function to generate feedback based on negative reviews
def generate_feedback(negative_text):
    feedback = ""
    for keyword, response in owner_feedback.items():
        if keyword in negative_text:
            feedback += response + "\n"
    return feedback.strip()

# Print a few negative reviews and their generated feedback
num_reviews_to_print = 5  # Number of negative reviews to print
for i, review in negative_reviews.head(num_reviews_to_print).iterrows():
    print("Negative Review:", review['Review Text'])
    print("\n")
    print("Generated Feedback:")
    print(generate_feedback(review['Review Text']))
    print("\n")
```

Negative Review: 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, sleeves are long and it doesn't go in petite. also a bit loose for me, but no xxs… so i kept it and wil ldecide later since the light color is already sold out in hte smallest size…

Generated Feedback:
Some customers have reported issues regarding product sizing. It might be beneficial to review the size chart for accuracy and consider offering more detailed size information.
There have been complaints about the product size being smaller than expected. Providing clearer size guidance and offering options for different body types may help address this issue.

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

Generated Feedback:
There have been complaints regarding product length accuracy. Reviewing and updating product descriptions for accuracy could help alleviate this issue.
There have been complaints about the product size being smaller than expected. Providing clearer size guidance and offering options for different body types may help address this issue.

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

Generated Feedback:
Some customers have mentioned discomfort with the product. Exploring ways to enhance comfort or offering alternative options may improve customer satisfaction.
Some customers have reported issues with the product size being larger than expected. It might be beneficial to provide clearer size guidance to avoid such discrepancies.
There have been complaints about the product size being smaller than expected. Providing clearer size guidance and offering options for different body types may help address this issue.

Negative Review: 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 something stronger, but annoying that it's come to that.

Generated Feedback:
Concerns have been raised about product durability, with reports of items breaking. Evaluating product durability and considering improvements or replacements may be necessary.
There have been reports of customers finding our product disappointing. Understanding the reasons for dissatisfaction and implementing improvements may

be necessary.
Some customers have found our product annoying. Understanding the specific concerns and taking corrective actions may be necessary.

Negative Review: Really cute piece, but it's huge. i ordered an xxs petite and it was unfortunately extremely wide and not flattering. returning.

Generated Feedback:
Some customers have reported issues with the product size being larger than expected. It might be beneficial to provide clearer size guidance to avoid such discrepancies.