Sentiment analysis for marketing

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Phase-1 Document Submission

Project : **Sentiment analysis for marketing**

OBJECTIVE :

Objective for the Sentiment Analysis Project:

- Identify the key features and aspects of competitor products that customers like and dislike.
- Understand the customer sentiment towards different aspects of competitor products, such as price, quality, performance, features, and customer service.
- Identify opportunities for improvement in your own product based on customer feedback on competitor products.
- Use NLP methods to gain a deeper understanding of customer feedback and opinion, such as identifying common themes, patterns, and trends.

1.Data Source :

The Kaggle Twitter US Airline Sentiment dataset is a great resource for the sentiment analysis project. It contains over 650,000 tweets from February 2015, each of which has been classified as positive, negative, or neutral. The dataset also includes a field for the airline that the tweet is about, as well as a field for the negative reason (if the tweet is negative).

This dataset is a great way to learn about the different ways that customers express their sentiment on social media. You can use the dataset to identify the key features and aspects of airline products that customers like and dislike, as well as the overall customer sentiment towards different aspects of these products. You can also use the dataset to identify common themes, patterns, and trends in customer feedback.

Dataset Link : https://www.kaggle.com/datasets/crowdflower/twitter-airline-sentiment

tweet_id	airline_sen...	airline_sen...	negativere...	negativere...	airline	airline_sen...
570306133677760513	neutral	1.0			Virgin America	
570301130888122368	positive	0.3486		0.0	Virgin America	
570301083672813571	neutral	0.6837			Virgin America	
570301031407624196	negative	1.0	Bad Flight	0.7033	Virgin America	
570300817074462722	negative	1.0	Can't Tell	1.0	Virgin America	
570300767074181121	negative	1.0	Can't Tell	0.6842	Virgin America	
570300616901320704	positive	0.6745		0.0	Virgin America	
570300248553349120	neutral	0.634			Virgin America	
570299953286942721	positive	0.6559			Virgin America	
570295459631263746	positive	1.0			Virgin America	

2.Data Preprocessing :

Data preprocessing is the critical first step in any machine learning project. It involves cleaning the data, removing outliers, and handling missing values to prepare the dataset for model training. In the context of the house price prediction project, let's elaborate on the specific steps:

Python program :

```
# Import necessary libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import missingno as msno
import warnings
warnings.filterwarnings(action='ignore')

# Import NLTK and download required resources
import nltk
from nltk.corpus import stopwords
from nltk.tokenize import word_tokenize, sent_tokenize
from nltk.stem import LancasterStemmer, WordNetLemmatizer

nltk.download('stopwords')
nltk.download('punkt')
nltk.download('wordnet')

# Import other libraries
import re
import string
import unicodedata
import contractions
from sklearn.feature_extraction.text import CountVectorizer,
TfidfVectorizer
import wordcloud
from wordcloud import STOPWORDS, WordCloud
import pandas as pd
from sklearn.model_selection import train_test_split, StratifiedKFold
from sklearn.svm import LinearSVC
from sklearn.ensemble import RandomForestClassifier
from sklearn.model_selection import cross_val_score
from sklearn.metrics import (
    recall_score,
    accuracy_score,
    confusion_matrix,
    classification_report,
    f1_score,
    precision_score,
```

```
    precision_recall_fscore_support
)

# Set options for displaying data
pd.set_option("display.max_columns", None)
pd.set_option("display.max_rows", 200)
```

Design Thinking :

In this project, we will develop a sentiment analysis system that helps businesses gain insights into customer opinions and sentiments regarding their products or services. By leveraging natural language processing techniques, we aim to analyze customer feedback and reviews to provide valuable insights for marketing strategies.

Project Goals

1.Sentiment Analysis Model: Develop a robust sentiment analysis model capable of accurately analysing customer sentiment from text data.

2.Data Collection and Preparation: Gather a diverse dataset of customer reviews and feedback related to the product or service of interest. Clean and preprocess the data to prepare it for analysis.

3.Model Training and Validation: Train and validate the sentiment analysis model using the prepared dataset, aiming for high accuracy and generalization.

4.Integration with Marketing Strategy: Integrate the sentiment analysis model into the marketing strategy to gain actionable insights from customer sentiments and improve marketing efforts accordingly.

5.Dashboard and Visualization: Create a user-friendly dashboard that displays the analyzed sentiments, trends, and insights derived from customer feedback, facilitating decision-making for marketing strategies.

Conclusion :

The sentiment analysis project can be a valuable tool for businesses to gain insights into customer sentiment towards competitor products. By understanding customer sentiments, businesses can identify strengths and weaknesses in competing products, thereby improving their own offerings.