**Customer Satisfaction Analysis based on product reviews**

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**Abstract:**

Sentiment analysis (or opinion mining) is a [natural language processing (NLP)](https://monkeylearn.com/natural-language-processing/) technique used to determine whether data is positive, negative or neutral. Sentiment analysis is often performed on textual data to help businesses monitor brand and product sentiment in [customer feedback](https://monkeylearn.com/customer-feedback/), and understand customer needs.

Sentiment analysis is the process of detecting positive or negative sentiment in text. It’s often used by businesses to detect sentiment in social data, gauge brand reputation, and understand customers.

Our project focuses on aspect-based sentiment analysis. The project will utilize a dataset of amazon phone reviews. Moreover, the program will detect polarity in text-based reviews. Understanding sentiments of customer feedback involves text-processing techniques like part-of-speech tagging and lemmatization (transforming a word to its root form).

For example, in this product review: "The battery life of this camera is too short", an aspect-based classifier would be able to determine that the sentence expresses a negative opinion about the battery life of the product in question.

The dataset used in our project is obtained from Kaggle, a public source for datasets. The amazon phone reviews are approximately 300 in number and have been extracted from Amazon.

**Features:**

The project will import csv file in Python. The features that will be obtained after the completion of this project are:

* Visual graphs to display the results and categorise them
* Word Cloud
* Sentiment by topic
* Overall sentiment
* Sentiment over time
* Topics over time
* Sentiment by customer rating

**Methods:**

Libraries like matplotlib, numpy, sckitlearn, pandas, NLTK, Re, tf-idf, word2vec, bert model will be employed throughout the project. Machine Learning models from KNN classifier and linear regression will be used.

Firstly, the dataset will be cleaned and then prepared. Then techniques of exploratory data analysis will be performed followed by machine learning models utilizing NLP. Conclusions will be obtained regarding the features mentioned-above.