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**Project Module: Building a Sentiment Analysis for Marketing**

**Using Amazon Product Reviews Datasets**

**PHASE 2**

**Abstract:**

The project aims to develop a Sentiment Analysis for Marketing using Amazon Product Reviews Datasets to provide exceptional customer service and support on a website or application. This project module document outlines the introduction, problem definition, needs, software and hardware requirements, step-by-step methods, and a final conclusion for the project.

**Step-by-Step Methods:**

**1.Problem Definition :**

Understand the problem and user needs.

**2.Data Collection:**

Gather data from various sources like social media (Twitter, Facebook, Instagram), online reviews or customer surveys. Consider using web scraping tools or APIs.

**3.Data Preprocessing:**

Clean and preprocess the text data. This involves tasks like removing special characters, converting text to lowercase, and tokenization.

**4.Labeling:**

For a supervised approach, label your data. Assign sentiment labels (positive, negative, neutral) to your dataset. You can use crowdsourcing platforms or sentiment analysis tools to help with this.

**5.Feature Extraction:**

Convert text data into numerical features. Common techniques include TF-IDF (Term Frequency-Inverse Document Frequency) or word embeddings (Word2Vec, GloVe).

**6.Model Selection:**

Choose a sentiment analysis model. Common choices include Naïve Bayes, Support Vector Machines or more advanced methods like deep learning with Recurrent Neutral Networks (RNNs) or Transformers (e.g.,BERT).

**7.Model Training:**

Train your selected model on the labeled dataset. Use a portion of the data for training and reserve some for validation and testing.

**8.Model Evaluation:**

Assess the model’s performance using metrics like accuracy, precision, recall, and F1-score. Adjust the model if necessary.

**9.Sentiment Analysis:**

Apply the trained model to analyze new text data. This could be real-time social media data or any text relevant to your marketing objectives.

**10.Visualization:**

Create visualizations to present the sentiment analysis results. Word clouds, bar charts, and sentiment over time plots can be useful.

**11.Actionable Insights:**

Interpret the results to gain insights. Identify trends, popular topics, and areas where sentiment is strongly positive or negative.

**12.Feedback Loop:**

Continuously monitor sentiment and adapt your marketing strategies accordingly. Use the feedback to improve customer satisfaction and brand perception.

**13.Reports and Dashboards:**

Create reports and dashboards to share the sentiment analysis results with relevant stakeholders.

**14.Iterate and Improve:**

Regularly review and refine your sentiment analysis process to ensure its effectiveness in guiding marketing strategies.

**Software Requirements:**

**1.**Python

**2.**Integrated Development Environment (IDE)

**3.**Python Libraries (NLTK, scikit-learn, pandas, matplotlib and seaborn, Tensorflow, Genism, VADER)

**4.**Database Management System

**5.**Version Control (e.g.,Git)

**6.**Text Editors

**7.**Operating System

**8.**Cloud Services

**9.**Collaboration Tools

**10.**Virtual Environment

**Hardware Requirements:**

**1.**Computer or Server

**2.**Internet Connection

**3.**Backup and Data Redundancy

**4.**Cooling and Ventilation

**5.**Power Supply

**6.**Monitors and Input Devices

**7.**Mobile Devices

**Used Datasets:**

The project utilizes Amazon Product Reviews Dataset as the primary source of information and knowledge for the marketing. This dataset includes reviews of various products available on Amazon. It’s often used to analyze customer sentiment towards specific products and brands.

**Conclusion:**

In conclusion, sentiment analysis is a valuable tool in marketing that helps businesses understand public perception and sentiment towards their products, services, and brands.

By following a structured approach, we can derive actionable insights to inform marketing strategies and improve customer satisfaction.