Project Initialization and Planning Phase

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| Date | 01 October 2024 |
| Team ID | LTVIP2024TMID24974 |
| Project Title | Analysis Of Amazon Cell Phone Reviews |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) report**

The proposed solution involves analyzing Amazon cell phone reviews using natural language processing techniques to identify key sentiment trends, product features, and customer preferences. This analysis will provide valuable insights into customer satisfaction and help improve product offerings.

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| **Project Overview** | |
| Objective | The primary objective of this project is to perform sentiment analysis and extract key insights from Amazon customer reviews on cell phones, identifying trends, customer satisfaction levels, and product features that are frequently discussed. |
| Scope | This project will analyze a dataset of Amazon cell phone reviews to provide valuable feedback to retailers and manufacturers. It will focus on understanding customer sentiment (positive, negative, neutral) and analyzing the frequency of specific terms (e.g., battery life, camera, performance). The scope will be limited to reviews in English for products in the cell phone category. |
| **Problem Statement** | |
| Description | This analysis involves examining Amazon customer reviews of cell phones to assess sentiment, highlight common complaints or praises, and identify trends in product performance, helping guide improvements and inform consumer decisions. |
| Impact | Solving this problem will provide manufacturers with actionable insights into consumer preferences and recurring issues. It will also allow customers to make informed purchasing decisions based on aggregated reviews and sentiments. |
| **Proposed Solution** | |
| Approach | The project will use natural language processing (NLP) techniques for sentiment analysis. Text pre-processing methods will clean the review text, and a machine learning model (such as Naive Bayes or a neural network) will classify reviews into different sentiment categories. Additionally, the project will utilize topic modeling to identify common themes. |
| Key Features | - Sentiment analysis (positive, negative, neutral classification)  - Topic modelling for key aspects (e.g., camera quality, battery life)  - Word cloud visualizations to highlight frequent terms  - Insights into the most discussed cell phone brands/models |

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** | | |
| Computing Resources | CPU/GPU specifications, number of cores | 2 x NVIDIA V100 GPUs for processing |
| Memory | RAM specifications | 16 GB RAM for data processing tasks |
| Storage | Disk space for data, models, and logs | 1 TB SSD for storing reviews, models, and logs |
| **Software** | | |
| Frameworks | Python frameworks | Flask for web interface |
| Libraries | Additional libraries | scikit-learn, pandas, NumPy, NLTK for sentiment analysis |
| Development Environment | IDE, version control | Jupyter Notebook for development, Git for version control |
| **Data** | | |
| Data | Source, size, format | Amazon product reviews dataset, estimated size: 100,000 reviews, format: CSV |

**Resource Requirements**