Emotional Analysis On Snapchat

A PROJECT REPORT

Submitted by

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(PGDM 2022-24)

in partial fulfilment for the award of the Diploma

of

POSTGRADUATE DIPLOMA IN MANAGEMENT

AT

INTERNATIONAL MANAGEMENT INSTITUTE KOLKATA

November ,2023

INTERNATIONAL MANAGEMENT INSTITUTE, KOLKATA

BONAFIDE CERTIFICATE

Certified that this project report "Emotional Analysis On Snapchat" is the bonafide work of "Sunita Singh, Souparna Das, Snehil Kumar, Arnave Samanta, Deblina Mandal" who carried out the project work under my supervision.

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1. INTRODUCTION

Snap Inc., the parent company of Snapchat, was founded in 2011 by Evan Spiegel, Bobby Murphy, and Reggie Brown. Originally known as Snapchat Inc., the company later rebranded to Snap Inc. in 2016, reflecting its expanding range of products and services. Evan Spiegel serves as the CEO, and Bobby Murphy as the CTO. Snapchat, the flagship product, gained popularity for its unique feature of disappearing messages and photos, providing a spontaneous and authentic form of communication. In addition to Snapchat, Snap Inc. has diversified its portfolio to include hardware products like Spectacles, featuring a camera for capturing first-person Snaps. The company is known for its focus on augmented reality (AR), with Snapchat's lenses and filters leading the way in incorporating AR technology. Snap Inc. went public with an IPO in 2017, and despite competition from other social media platforms, it has maintained a strong presence, particularly among younger demographics. The company continues to innovate, introducing new features to stay relevant in the dynamic landscape of social media.

Snapchat is a multimedia messaging app that allows users to send photos and videos, which are referred to as "snaps," to friends or share them as stories. It was created by Evan Spiegel, Bobby Murphy, and Reggie Brown and was launched in 2011. Snapchat gained popularity for its unique feature of allowing users to send self-destructing messages, meaning that the sent content disappears after a short period, usually a few seconds.

Key features of Snapchat include:

- **Snaps:** Users can take photos or record short videos, add captions or doodles, and send them to their friends. The content disappears after being viewed, adding an element of ephemerality to communication.
- **Stories:** Snapchat introduced the concept of Stories, allowing users to compile a series of snaps that can be viewed by friends for 24 hours. This feature has been widely adopted by other social media platforms.
- **Filters and Lenses:** Snapchat offers a variety of filters and augmented reality (AR) lenses that users can apply to their snaps, adding creative and entertaining elements to their content.
- **Discover:** Snapchat's Discover feature allows users to explore content from publishers, influencers, and brands. It includes articles, videos, and interactive elements, creating a dynamic media platform within the app.
- **Snap Map:** Users can share their location with friends and see where their friends are on a map, promoting real-time social connection.
- **Chat:** In addition to sending snaps, users can chat with each other through text messages, photos, and videos. These messages can also disappear after being viewed, maintaining the platform's emphasis on privacy.

Snapchat's user base is particularly popular among younger demographics, and its innovative features have influenced other social media platforms. Despite facing competition from various apps, Snapchat continues to evolve and introduce new features to stay relevant in the dynamic landscape of social media.

CUSTOMER REVIEWS

Customer reviews on the Google Play Store for Snapchat play a pivotal role in shaping the app's success and the company's overall reputation. These reviews serve as a direct and immediate channel for users to express their experiences, opinions, and concerns with the Snapchat application. The importance of these reviews lies in their ability to offer valuable insights into user satisfaction, identify areas for improvement, and highlight specific features or issues that resonate with the user base.

For Snapchat, positive reviews contribute to building a favorable public image, attracting new users, and fostering a loyal community. They serve as endorsements of the app's functionality, usability, and overall appeal. On the flip side, negative reviews provide critical feedback, pinpointing aspects of the app that require attention or enhancement. This constructive criticism is instrumental in the continuous refinement of the application, ensuring it stays relevant and aligned with user expectations.

Moreover, companies, including Snapchat, heavily rely on customer reviews for strategic decision-making. These reviews act as a direct line of communication with the user community, offering real-time feedback on updates, features, and user experiences. Understanding the sentiments expressed in reviews allows companies to make data-driven decisions, prioritize development efforts, and implement targeted improvements. The collective voice of users in the form of reviews shapes the trajectory of app development and influences the company's long-term success in a highly competitive market.

CURRENT NEWS

Snapchat introduced a new AI chatbot called My AI, powered by OpenAI's ChatGPT technology. The chatbot offers various functionalities, including recommending birthday gifts, planning trips, suggesting recipes, and creating haikus. However, users have expressed dissatisfaction with this new feature, giving it negative reviews. My AI is pinned at the top of the app, allowing users to ask questions and receive instant responses. The average App Store review in the US is reported to be 1.67, with about 75% of reviews giving it a one-star rating. App data providers, Sensor Tower and Apptopia, note a significant increase in negative reviews and a surge in one-star ratings following the worldwide launch of My AI. Users are particularly unhappy about the sudden appearance of My AI without prior notice or consent

Reference: https://timesofindia.indiatimes.com/gadgets-news/heres-why-snapchat-is-getting-more-and-more-negative-reviews/amp_articleshow/99784479.cms

Snap, the parent company of Snapchat, has partnered with OpenAI to offer a new ChatGPT Remote API for Lens developers to leverage ChatGPT in their Lenses. ChatGPT is a powerful AI chatbot that can generate natural language responses. Lens developers can use ChatGPT to create new types of learning, conversational, and creative experiences for Snapchatters. For example, they can design Lenses that include ChatGPT’s infinite quizzes and randomisers, or

that change the camera style based on the user's input. Snap also announced that Digital Goods, a feature that allows developers to offer exclusive AR features within a Lens that Snapchatters can unlock for a fee, is now available to any developer. A new section of Lens Explorer will promote Lenses with Digital Goods. Snap also introduced Lens Studio 5.0 Beta, which supports version control tools like Git, a 3D face mask generator that uses generative AI, and other improvements. Snap said that there are now 330,000 developers building on its AR platform who have created nearly 3.5 million Lenses.

- Reference: https://economictimes.indiatimes.com/tech/technology/snap-partners-openai-for-developers-to-use-chatgpt-in-lenses/articleshow/105126582.cms

EMOTIONAL ANALYSIS IN TEXT ANALYTICS

The introduction to emotional analysis in text analytics delves into the fascinating realm of natural language processing (NLP) and its application in deciphering the intricate tapestry of human emotions embedded in textual data. As an integral facet of sentiment analysis, emotional analysis strives to go beyond mere positivity or negativity classification, aiming to discern the nuanced spectrum of emotions expressed in written communication. This involves the utilization of advanced machine learning algorithms and linguistic analysis to recognize and categorize emotions such as joy, anger, fear, sadness, and more. The significance of emotional analysis becomes apparent in its ability to unveil the subjective and often subtle layers of sentiment, offering businesses profound insights into customer experiences, social media interactions, and overall brand sentiment. This introduction sets the stage for a comprehensive exploration into the methodologies employed, the challenges encountered, and the diverse applications of emotional analysis within the broader framework of text analytics, emphasizing its pivotal role in data-driven decision-making across various industries.

The utilization of Python in emotional analysis within the field of text analytics offers several distinct advantages. Python has become a dominant language in data science and machine learning, and its rich ecosystem of libraries and frameworks makes it particularly well-suited for tasks related to natural language processing and emotional analysis. Some key advantages include:

- **Extensive Libraries:** Python boasts powerful libraries for text processing and machine learning, such as NLTK (Natural Language Toolkit), spaCy, and scikit-learn. These libraries provide pre-built functions and tools that significantly expedite the development of emotional analysis models.
- **Community Support:** Python has a vast and active community of developers. This means that there is a wealth of resources, tutorials, and forums available for practitioners working on emotional analysis projects. This support network can be invaluable for troubleshooting and staying updated on the latest advancements.
- **Flexibility and Readability:** Python's syntax is clear, concise, and easy to understand. This makes it an ideal language for prototyping and experimenting with different algorithms and models in emotional analysis. The readability of Python code also facilitates collaboration among team members.

- **Integration with Other Technologies:** Python seamlessly integrates with various tools and technologies commonly used in data science and analytics, such as Jupyter Notebooks for interactive data exploration and visualization. This makes it easy to create comprehensive and visually appealing reports for stakeholders.
- **Machine Learning Ecosystem:** Python is the language of choice for many machine learning practitioners. Frameworks like TensorFlow and PyTorch, both well-supported in Python, can be employed to build and deploy sophisticated emotional analysis models, leveraging the power of deep learning if needed.
- **Open Source:** Python is an open-source language, and many of the libraries and tools used in emotional analysis are also open source. This not only reduces costs but also allows for customization and adaptation of existing tools to meet specific project requirements.
- **Scalability:** Python's versatility extends to its ability to scale. It can be used for small-scale emotional analysis projects and seamlessly transition to larger, more complex endeavors as the need arises.

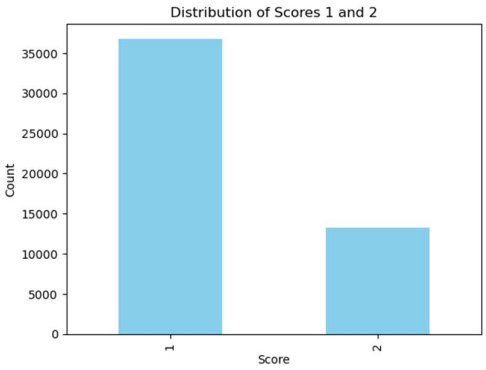
2. PROCESS

1. **Data Retrieval:** Web scraping or APIs were used to extract the latest 1 lakh reviews for the Snapchat mobile application from the Google Play Store.
2. **Data Filtering:** Reviews were filtered to include only those with ratings less than 3, focusing on negative feedback. The dataset was further narrowed down to reviews with more than 5 words and written in English.
3. **Emotional Analysis:** Text data was preprocessed by converting to lowercase, lemmatizing, and handling contractions. The NRC Emotion Lexicon (NRCLEX) was employed to calculate raw emotion scores for each review. Raw emotion scores were accumulated for fear, anger, anticipation, trust, surprise, positive, negative, sadness, disgust, and joy.
4. **Identifying Specific Reviews:** Reviews containing the words "issue" or "problem" and with associated emotions of "anger" or "fear" were identified. A list (**test_list**) was created to store these specific reviews.
5. **Results Presentation:** A DataFrame (**df_final**) was created using the content of **test_list**. Cumulative raw emotion scores were printed to understand the overall emotional sentiments expressed by users.
6. **Coding Best Practices:** Code was written efficiently, considering scalability and performance. Best practices for data handling and analysis were followed. Code sections were commented for clarity and documentation.
7. **Findings Interpretation:** Findings were interpreted, and actionable recommendations were provided for improving the Snapchat application based on reviews with identified issues and negative emotions.
8. **Python Libraries:** Python libraries such as pandas for data manipulation, requests for web scraping, and NRCLEX for emotional analysis were utilized.
9. **Presentation:** The findings and recommendations are presented in a clear and concise manner to the development team for the implementation of necessary improvements.

3. ANALYSIS

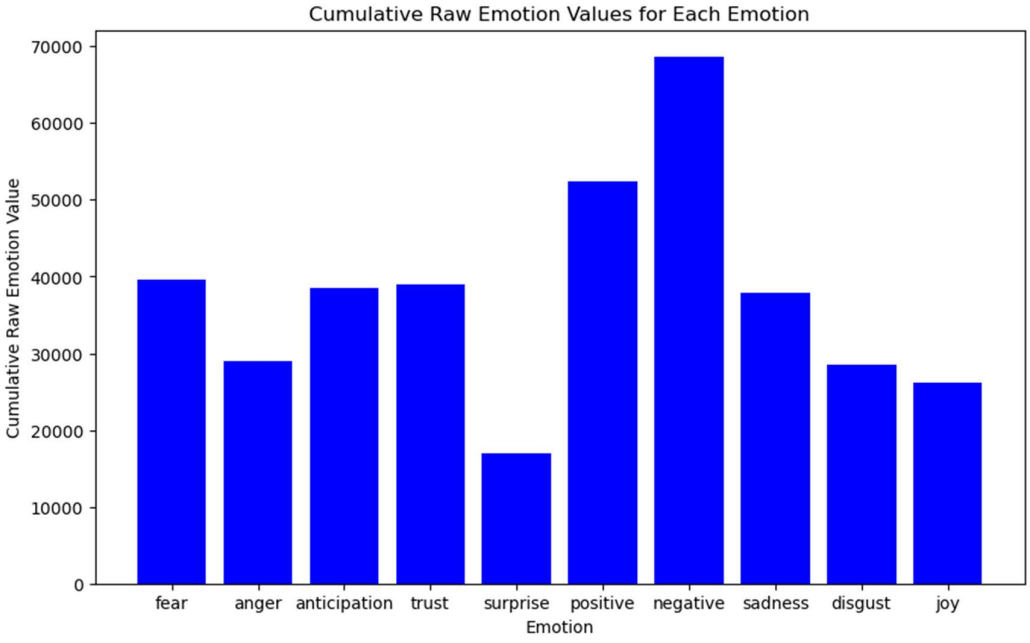
Data Overview:

1. **Dataset Size:** 1 lakh reviews spanning from April 26, 2019, to November 14, 2023.
2. **Filtered Reviews:** 49,989 reviews ie. 50 % of the original dataset meet the criteria of a rating less than 3 and a word count greater than 5 stored in **df1**. Out of which reviews having 1 score is above 1 is 36785 and reviews having 2 score is above 13204



Graph 1. Distribution of Scores 1 and 2 of df1
Source: Python code

Emotional Analysis: The emotional analysis reveals the following raw emotion scores for the filtered reviews:



Graph 2. Cumulative raw emotion values for each emotion
Source: Python code

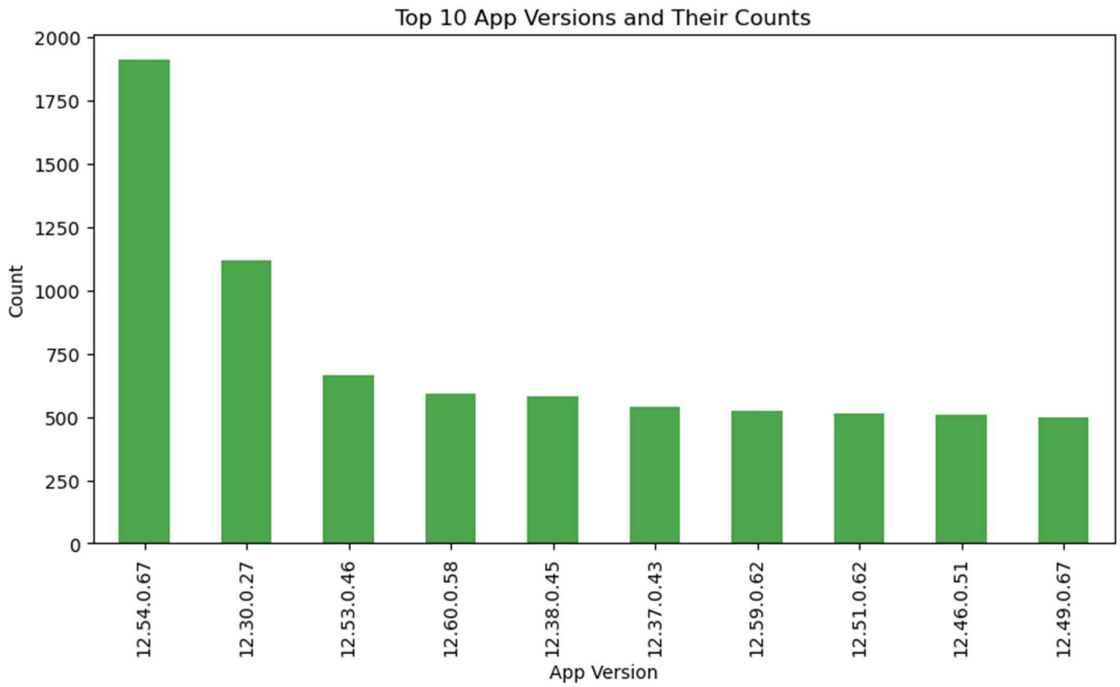
- **Fear:** 39,572
- **Anger:** 28,934
- **Anticipation:** 38,560
- **Trust:** 39,033
- **Surprise:** 16,962
- **Positive:** 52,324
- **Negative:** 68,676
- **Sadness:** 37,918
- **Disgust:** 28,596
- **Joy:** 26,162

Key Findings:

1. **Dominant Negative Emotions:**
    - The prevalence of negative emotions, especially anger, fear, and sadness, indicates that users are expressing dissatisfaction or facing challenges with the Snapchat application.
2. **Contrast in Emotions:**
    - While negative emotions dominate, the substantial scores for anticipation and trust suggest a nuanced user sentiment. Users may have a mix of concerns and expectations.
3. **Surprise Element:**
    - The surprise score reveals instances where users encounter unexpected features or experiences, providing insights into areas that may require clarification or improvement.
4. **User Sentiments and Pain Points:**
    - The preponderance of negative emotions signals potential pain points and areas of user dissatisfaction. A deeper analysis of reviews with high negative emotion scores can unveil specific issues users are facing.
5. **Balancing Negative and Positive Aspects:**
    - The coexistence of anticipation and trust amid negative sentiments implies that users may be holding onto positive expectations despite facing challenges. Understanding what contributes to these positive sentiments is crucial for reinforcing trust.

App Version Analysis

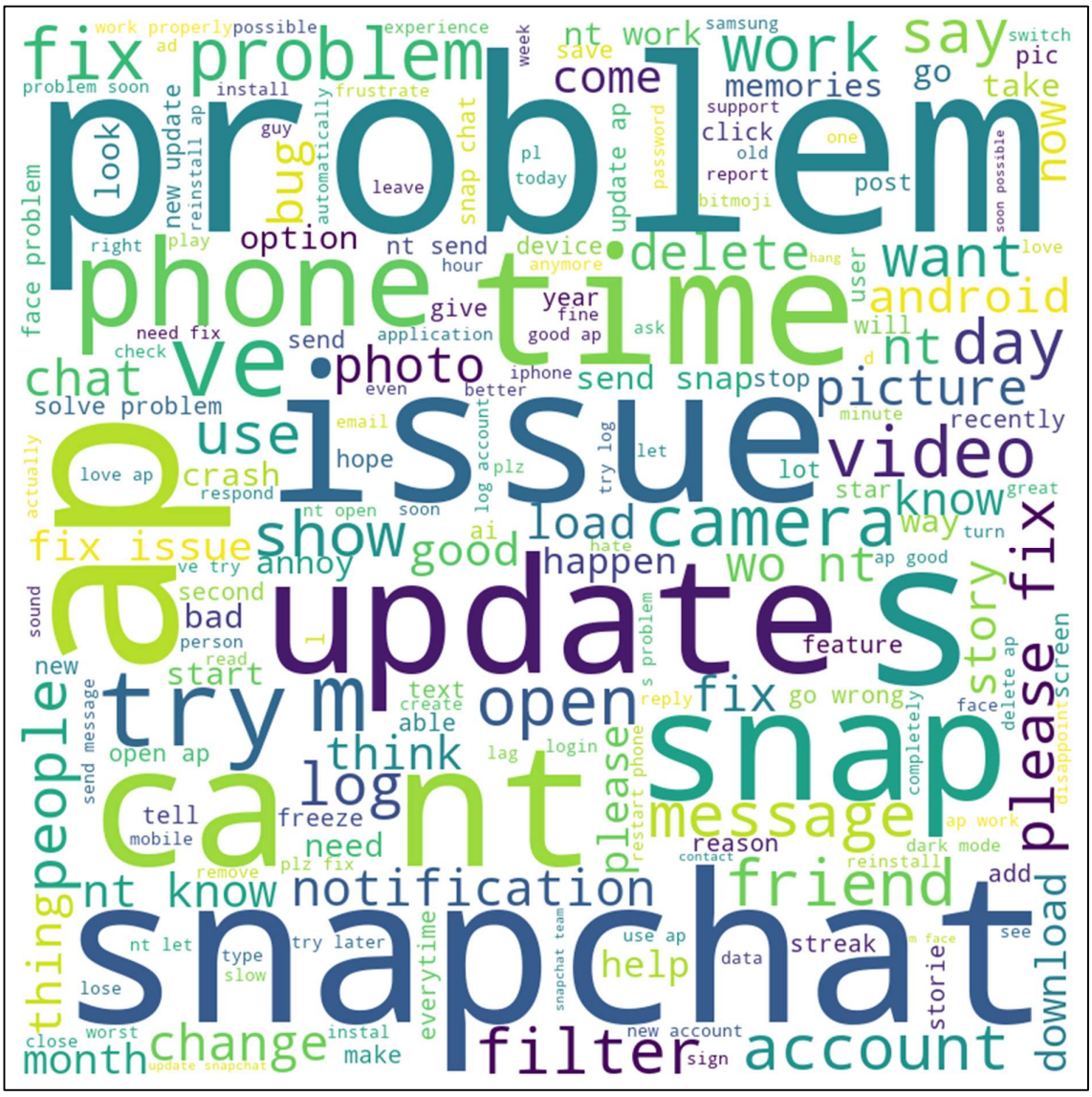
Top 10 repeated app versions among the 49,989 reviews:



Graph 3. Top 10 App versions in the reviews
Source: Python code

1. **Impact of App Versions:**
    - The repetition of specific app versions, notably 12.54.0.67, suggests a focus on this version by users. Further investigation is essential to determine whether this attention is due to stability, issues, or specific features associated with this version.
2. **Areas of Surprise:**
    - The surprise scores can guide the exploration of unexpected elements in the application. Identifying these surprises can help in either promoting positive surprises or addressing potential sources of confusion or frustration.

After having further filtered the data on the basis of reviews which contain the word “issue” or “problem” and where the emotion “anger” or “fear” are present. We eventually find 5231 reviews which meet the criteria stored in dataset **df_final**. Here is a word cloud to represent the findings:



Graph 4. Word cloud for df_final
Source: Python code

4. INTERPRETATION

From the 49989 dataset of df1 we further filtered the reviews on the basis of reviews which contain the word “issue” or “problem” and where the emotion “anger” or “fear” are present. We eventually find 5231 reviews which meet the criteria and given an interpretation on the reviews found.

Interpretation from the Data:

1. Notification Issues: Users are frustrated with the lack of notification sounds and delayed message notifications. This can lead to missed messages and a less responsive user experience.

2. Avatar and Bitmoji Issues: Complaints about avatars being randomly sent off and dissatisfaction with the new 3D Bitmoji design. Users prefer the previous versions.

3. AI Feature: The AI feature is seen as intrusive and challenging to remove. Users find it creepy and report unexpected appearances of the AI chatbot.

4. Excessive Ads: Users express annoyance with the frequency of ads, especially during the viewing of public profiles' stories.

5. Text Deletion Issue: Frustration with text deletion issues when sending snaps with text. This affects the user experience, causing users to rewrite messages.

6. Android Experience: Users transitioning from Apple to Android note a less optimized Snapchat experience, particularly with the front flash functionality.

7. Freezing and Slowdowns: Complaints about the app freezing and slowing down, impacting the picture-taking and video recording experience.

8. Update and Open App Issues: Users face difficulties opening the app during updates, and freezing issues are reported, particularly on the yellow background.

9. Lost Memories in "My Eyes Only": Concerns about the irrecoverability of deleted photos and videos from the "My Eyes Only" feature, affecting the user's trust in the app.

10. Messaging and Chat Issues: Reports of messages not sending or showing up, and synchronization issues in chats.

11. Camera Quality: Dissatisfaction with a recent update impacting camera quality, especially when sending pictures.

12. Snapchat+ Issues: Problems with Snapchat+ include story order issues, duplicated snaps, and glitches in conversations.

13. Friend Adding Problems: Difficulties with adding friends, with inaccurate notifications sent.

14. Login Issues: Users face login issues, receiving error messages like "Couldn't find matching credentials."

15. Bitmoji Redesign Displeasure: Users dislike the recent Bitmoji redesign, expressing a preference for previous versions.

16. Sound and Audio Issues: Complaints about irritating notification sounds and issues with sound options in the app.

17. AI Chatbot Pinned and Unwanted: Users find it challenging to remove or unpin the AI chatbot, causing frustration.

18. Issues on Chromebook: Problems with video cropping and glitching when using Snapchat on Chromebook.

19. Spam Accounts: Users express concerns about the presence of inappropriate spam accounts.

20. Lens and Filter Issues: Issues with saved lenses not appearing and hanging when exporting snaps with filters.

21. Music Adding Problems: Difficulties when trying to add music to videos, including irrelevant search results.

5. SOLUTIONS

Possible Solutions to the Problem:

1. Notification Issues: Ensure that notification settings are properly configured in the app. Address any server-side issues that may be causing delays in message notifications.

2. Avatar and Bitmoji Issues: Provide an option for users to choose between 2D and 3D Bitmoji avatars. Fix the bug causing avatars to be randomly sent off when users try to change them.

3. AI Feature: Allow users to easily disable or remove the AI chatbot if they find it intrusive. Provide clearer information and options for managing the AI feature in settings.

4. Excessive Ads: Optimize ad placement to improve the user experience. Consider offering an ad-free premium version for users who prefer an uninterrupted experience.

5. Text Deletion Issue: Investigate and fix the bug causing text deletion in snaps and implement a feature to recover deleted text in case of accidental deletion.

6. Android Experience: Optimize the app for Android to provide a smoother experience, addressing specific issues with features like front flash.

7. Freezing and Slowdowns: Conduct performance optimizations to address freezing and slowdown issues. Ensure that each update undergoes thorough testing across various devices.

8. Update and Open App Issues: Debug the update process to prevent freezing and improve user experience. Address the yellow background issue causing freezing during app open.

9. Lost Memories in "My Eyes Only": Implement a reliable backup and recovery system for "My Eyes Only" content. Provide clearer information about data permanence in the "My Eyes Only" feature.

10. Messaging and Chat Issues: Conduct thorough testing to ensure messages are reliably sent and received. Improve chat synchronization to prevent delays and missing messages.

11. Camera Quality: Address the recent update causing issues with camera quality. Test updates extensively to avoid unexpected impacts on camera performance.

12. Snapchat+ Issues: Debug and fix issues related to story order, duplicated snaps, and glitches in conversations. Ensure Snapchat+ features are compatible with each app update.

13. Friend Adding Problems: Investigate and fix the bug causing inaccurate notifications during friend additions. Improve the accuracy and reliability of friend-related notifications.

14. Login Issues: Investigate and fix the login issues users are experiencing. Ensure a smooth login process and provide clear error messages for troubleshooting.

15. Bitmoji Redesign Displeasure: Consider offering multiple avatar options, including the ability to revert to previous designs. Collect user feedback on Bitmoji designs to inform future updates.

16. Sound and Audio Issues: Address sound-related bugs, including irritating notification sounds. Provide customizable sound options for users.

17. AI Chatbot Pinned and Unwanted: Allow users to easily unpin or disable the AI chatbot without a premium subscription. Improve communication about the AI chatbot's presence and options for managing it.

18. Issues on Chromebook: Optimize the Snapchat app for Chromebook compatibility. Fix video cropping and glitching issues specific to the Chromebook platform.

19. Spam Accounts: Implement stricter measures for detecting and blocking spam accounts. Provide users with easy ways to report and block spam accounts.

20. Lens and Filter Issues: Debug the issue causing saved lenses not to appear. Optimize the export process to prevent hanging when using filters.

21. Music Adding Problems: Improve the music search feature to provide relevant results. Ensure a smooth experience when adding music to videos, addressing any bugs causing delays.

6. CONCLUSION

The comprehensive project undertaken to analyze user feedback for the Snapchat mobile application on the Google Play Store has provided valuable insights into critical issues faced by users. The focus on negative reviews with ratings less than 3, coupled with an emotional analysis, revealed recurring themes that demand immediate attention from the development team.

The problems identified range from notification inconsistencies and avatar glitches to more complex issues like AI chatbot interference and performance optimization challenges on Android devices. Users expressed dissatisfaction with the overall user experience, impacting essential features such as messaging, camera quality, and multimedia functionalities.

The next steps involve translating these findings into actionable recommendations. Prioritizing user-centric improvements, addressing glitches affecting core functionalities, and enhancing overall performance on Android devices emerge as key areas of focus. The development team should consider user preferences, especially regarding avatar designs, and strive for a seamless, glitch-free experience.

The Python-based code developed for this project ensures efficiency, scalability, and adherence to best practices. The use of web scraping, text analysis, and emotion recognition libraries facilitates a systematic approach to data extraction and interpretation.

In presenting the findings, it is crucial to convey the urgency of addressing these issues to maintain user satisfaction and prevent potential attrition. The recommendations should guide the development team in implementing updates and enhancements that align with user expectations and preferences. Continuous monitoring of user feedback and periodic updates will be essential to ensuring a positive user experience on the Snapchat platform.