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WhatsApp Chat Analysis and Visualization

Er. Farzana Khan, Farooq Shaikh, Rohan Shirke, Raj Manjrekar, Aakash Kumar Jha
Department of Information Technology
MH Saboo Siddik College of Engineering, Byculla, Mumbai, India

Abstract: *One of the popular media these days... Guess what? One WhatsApp. It is one of the favorite advertising platforms of all of us because of its attractive features. It has more than 2 billion users worldwide and "according to research, the average user spends more than 195 minutes per week on WhatsApp"[10]. How bad is the above. We are happy that social media, where information can be accessed and updated more easily, is in our lives. However, no one can deny that its excessive use can lead to serious health problems that can affect our lives. Being addicted can affect the way you live, work, and sleep. Addiction reduced the ability to listen, think, and reason, leading to negative emotions.[1] Therefore, in order to reduce such problems, our aim is to create an interactive system that can track ourselves and detect when we use WhatsApp. We will build a web application using various methods available for business analysis. It is a combination of machine learning and NLP. This WhatsApp chat analyzer retrieves and analyzes WhatsApp chat files from users and gives different results in form of visualizations.*

Keywords: WhatsApp chat files, visualization, Sentiment Analysis, Emoji Analysis, NLP, etc

I. INTRODUCTION

The WhatsApp Chat Analyzer project aims to analyze the WhatsApp chat data and provide insights into the chat behavior and patterns. The project extracts data from the chat files and presents it in a readable and structured format. It provides several features like word frequency analysis, chat sentiment analysis, and user activity analysis, which helps in understanding the chat patterns, emotions, and trends.

In this decade, the technology of the future relies on knowledge. This information can only be obtained by doing some research in the context of the desired device. Appropriate data is greatly needed as many people are interested in machine learning to build models that help solve a variety of problems. These models require a well-designed learning model that better enables these models. Our project provides a deep data search in different types of WhatsApp chats. This project can be useful for various applications like market research, social studies, and psychological studies. The project can provide valuable insights into consumer behavior, political sentiments, and mental health. The research paper aims to explore the various aspects of this project and its potential applications.

II. LITERATURE SURVEY

A. Analyze the usage and impact of WhatsApp Messenger based on a demo study.[2]

Has done a lot of research and analysis on the use and impact of WhatsApp. Some of these studies investigated the impact of WhatsApp on students, while others were based on local populations. A study conducted in South India surveyed 18 to 23 year olds to explore the importance of WhatsApp among young people. From this research, we found that students spend 8 hours a day using WhatsApp and stay online for about 16 hours a day. All participants agreed that they use WhatsApp to communicate with their friends. They also use WhatsApp to exchange pictures, audio and video files with their friends. In addition, it turned out that the only application that young people use while spending time on their smartphones isWhatsApp. The method used in this survey is to analyse the use of WhatsApp and its popular services and to identify the positive or negative effects of WhatsApp use.

B. Content Analysis of WhatsApp chats.[5]

Research studies measure the effectiveness of the WhatsApp application. This study will be a major study to explore the possibility of WhatsApp to become the leading mobile application. With the development of technology and the advent of mobile phones,communication has completely changed. The growth of smartphones and social networking apps makes communication faster and easier than ever before. People may no longer have enough money to eat, sleep

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or dress, but they have a phone in their pocket to interact with family, friends and customers. As the situation changed, the use of quantitative and qualitative research methods increased over time. The service is designed to measure the characteristics of communication devices and their impact on human behaviour. At the same time, smartphones and instant messaging applications such as WhatsApp, Viber and Skype have taken over the communication world.

C. WhatsApp Group Data Analysis with R.[4]

WhatsApp group chat data used for analysis is 1 year old (May 2015 - May 2016), has a total of 5,5563 files, and there are some features that define the number of WhatsApp chat users. group, eg age, time of day, response level, language sent by each person in the group (smiley, text, multiplayer), which group has more age, etc. The main characteristics specified for this analysis are the type of message sent, year/month/week/day/hour spent, time (am/pm), age of sender, gender (male/female). RStudio is the most popular R IDE mainly because of its open source for data analysis and visualization.

III. SYSTEM IMPLEMENTATION

- Data Import: The system uses Python programming language and pandas library to import the WhatsApp chat data, which is in a specific format, into a pandas DataFrame.
- Data Processing: The system employs various analytical methods, such as natural language processing (NLP) and sentiment analysis, to process the data and generate insights about the chat.
- Data Visualization: The system uses data visualization libraries such as matplotlib and seaborn to create visualizations such as bar graphs, pie charts, and word clouds to help users understand the data.
- User Interface: The system provides a user interface using a web framework such as Flask, where users can upload their WhatsApp chat data and interact with the visualizations.
- Security: The system implements security measures such as HTTPS and encryption to ensure the security and privacy of user data.
- Maintenance: The system is regularly maintained by updating libraries and dependencies to ensure that it remains up-to-date with the latest analytical methods and visualizations, and that it continues to function correctly.

IV. SYSTEM DESIGN

WhatsApp-Analyzer is an advanced analytics tool that provides a comprehensive understanding of WhatsApp chats. The system is designed to work with chat data that can be exported from WhatsApp, enabling users to analyze their chats and generate meaningful insights using powerful data manipulation techniques.

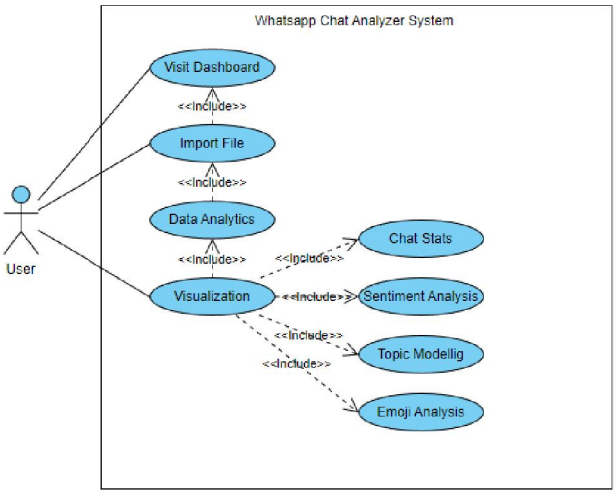

Fig 4.1 Use Case Diagram

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The system uses a variety of techniques to analyze the data, such as natural language processing, sentiment analysis, and data visualization, to identify patterns and trends within the chat. The system generates multiple visualizations that help users better understand their conversations, such as identifying the most responsive participants, the most active hours and days of the week, and the most frequently used words and emojis in the chat.

To achieve this, the system employs a preprocessing step to ensure that the data is properly formatted and stored before analysis. This preprocessing step plays a crucial role in ensuring the accuracy and reliability of the system's analytical results.

The system is built using various Python libraries, including Numpy, Pandas, Matplotlib, Emoji, Seaborn, and other building blocks. These libraries enable developers to create efficient and effective code, and provide users with a clear understanding of the data analysis process.

Overall, WhatsApp-Analyzer is a powerful tool for gaining insights into WhatsApp chats, providing users with valuable insights and visualizations that help them better understand their communication practices.

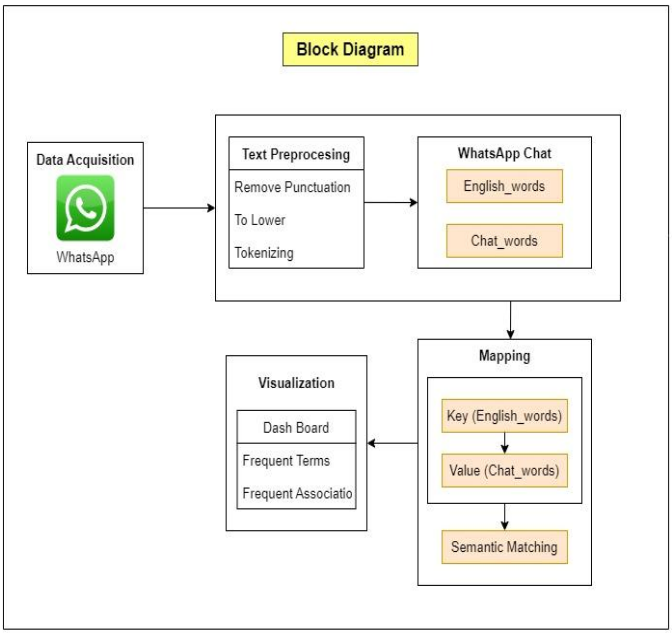

Fig 4.2 Block Diagram

V. OUTPUT

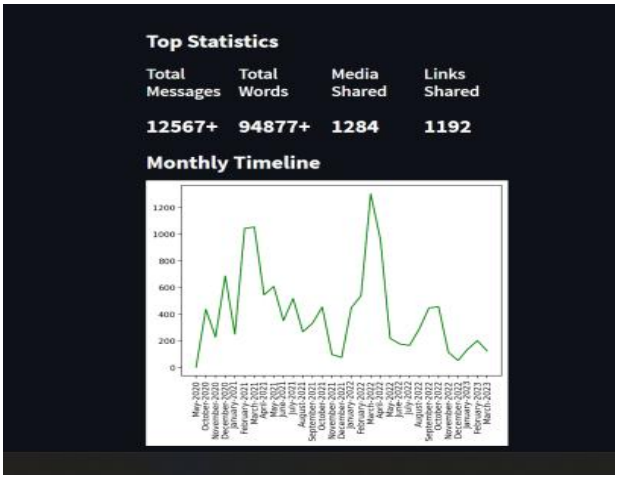

Fig 5.1 Top Statistics

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Fig 5.1 shows overall chat statistics of Group. It also shows Each User messaging activity in a group based on individual analysis on monthly basis.

Fig 5.2 Daily Timeline

Fig 5.2 shows overall daily timeline statistics of Group. It also shows Most busy days and month in chat room.

Fig 5.3 Weekly Activity Map

Fig 5.3 shows weekly activity in form of Heatmap.

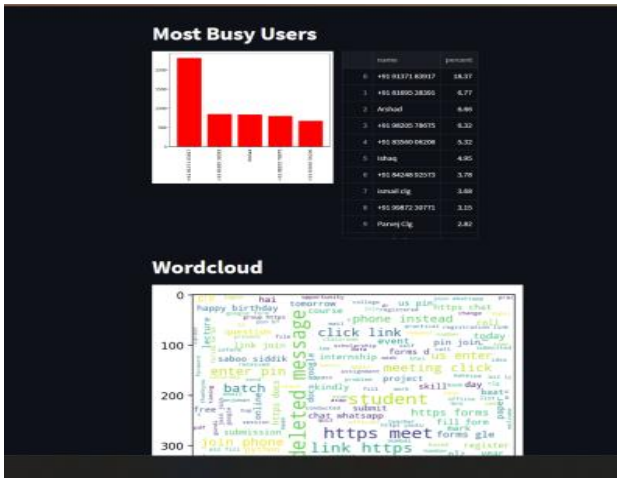

Fig 5.4 Most Busy Users

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Fig 5.4 shows most busy user in a group in histogram format. It also shows chat engagement of each user calculated in percentage and word cloud based on frequency of word.

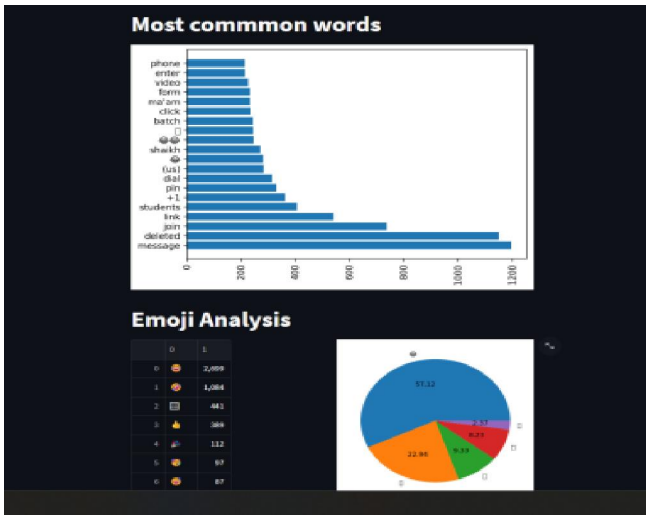

Fig 5.5 Emoji Analysis

Fig 5.5 shows most common words used in a group. It also shows chat emoji used in group with their respective frequency.

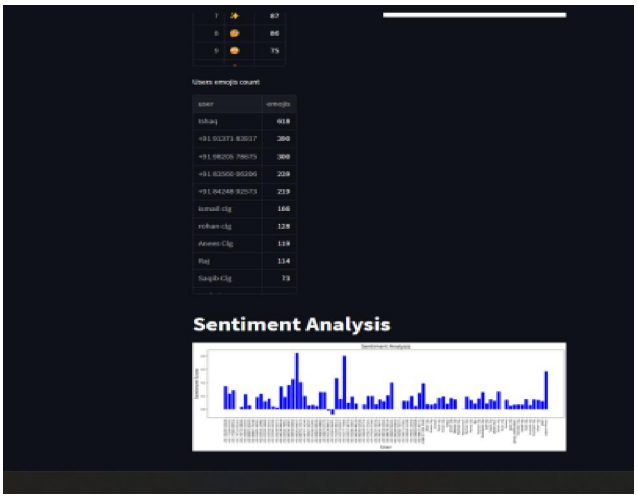

Fig 5.6 Sentiment Analysis

Fig 5.6 shows sentiment analysis of each user in group

VI. CONCLUSION

This project endeavor has successfully harnessed cutting-edge analytical tools to scrutinize WhatsApp chat data, elucidating significant statistics and vivid visualizations that facilitate a more profound understanding of user communication practices. The implementation of a pandas DataFrame has enabled the facile manipulation and analysis of the data, yielding valuable insights into aspects such as message frequency, temporal patterns, and frequently employed lexicons and emoticons.

The resulting graphical representations, including bar graphs, pie charts, and word clouds, imbue the findings with an intuitive quality, thus rendering the identification of messaging behavior trends an effortless and aesthetically pleasing experience. The project serves as a testament to the efficaciousness of data analysis and visualization methodologies in the exploration of messaging applications and the illumination of user behavior.

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VII. FUTURE SCOPE

The future scope of the WhatsApp Chat Analyzer project is extensive and varied. One potential area for expansion is the integration of more advanced processing techniques, such as text summarization, time-series analysis, to provide more granular insights into the chat data.The chat messages can be analyzed over time to identify any trends or patterns. This can be done by using time-series analysis techniques like moving averages, trend analysis, and seasonal decomposition. Additionally, the project could be extended to include support for other popular messaging platforms, such as Facebook Messenger or Slack.

VIII. ACKNOWLEDGMENT

First and foremost, we would like to thank our project supervisor, Er. Farzana Khan, and our in-charge Head of Department, Er. Shrinidhi Gindi, for their invaluable guidance, insights, and unwavering support throughout the project. Their expertise and encouragement have been instrumental in shaping our ideas and helping us to achieve our goals. We would like to expressours deep regards in gratitude to all the individuals and organizations who have supported and contributed to the successful completion of this project.

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REFERENCES

[1]. Ahmed, I., Fiaz, T., Mobile phone to youngsters: Necessity or addiction, African Journal of Business Management Vol.5 (32), pp. 12512-12519, Aijaz, K. (2011).

[2]. Aharony, N., T., G., The Importance of the WhatsApp Family Group: An Exploratory Analysis. Aslib Journal of Information Management, Vol. 68, Issue 2, pp.1-37 (2016).

[3]. Access Data Corporation. FTK Imager, 2013. Available at http://www.accessdata.com/support/product-downloads.

[4]. WhatsApp Group Data Analysis with R. Available at https://www.ijcaonline.org/archives/volume154/number4/patil-2016-ijca-912116.pdf

[5]. Content Analysis of WhatsApp chats. Available at https://www.arcjournals.org/pdfs/ijmjmc/v4-i1/2.pdf

[6]. Available from: http://www. statista.com/statistics/260819/numberof-monthly-active-WhatsApp-users. Number of monthly active WhatsApp users worldwide from April 2013 to February 2016(in millions).

[7]. D. Bouhnik and M. Deshen, "WhatsApp Goes to School: Mobile Instant Messaging Between Teachers and Students," Journal of Information Technology Education: Research, vol. 13, pp. 217- 231, 25 August 2014.

[8]. Shaikh Mohd Saqib. Whatsapp Chat Analyzer. International Research Journal of Modernization in Engineering Technology and Science. Volume: 04/Issue:05/May-2022

[9]. K, Ravishankara & Dhanush, & Vaisakh, & S, Srajan. (2020). Whatsapp Chat Analyzer. International Journal of Engineering Research and. V9.10.17577/IJERTV9IS050676

[10]. Available from: http://www. statista.com/statistics/260819/numberof-monthly-active-WhatsApp-users. Number of monthly active WhatsApp users worldwide from April 2013 to February 2016(in millions).