A Platform for Sharing and Collaboration on Sensitive Content with Advanced Permissions and Access Control for Users

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Abstract—The main concern of any social media application is Privacy and Security. Social media network sites such as Facebook, Twitter, Whatsapp, etc are majorly concerned about their privacy and security contents. The primary purposes of these applications are to allow people to share their interests, activities and daily chats, etc. This platform is designed to provide a high level of security and privacy for sensitive information, while also allowing for seamless collaboration among users. It allows users to create and manage content, invite others to collaborate, and control who has access to specific files and information. Advanced permission settings enable users to grant different levels of access to different individuals or groups, ensuring that only authorized users can view or modify sensitive content. The platform is built to meet the needs of organizations and individuals who require a secure and flexible platform for sharing and collaboration on sensitive content. There are many technologies used to protect the safety and security of social media applications. This paper outlines a data protection method for user-shared content and concludes by discussing the process of preventing the sharing of harmful content.

I. INTRODUCTION

Social media applications play a significant role in today's society. People of all ages use these apps to share their interests and activities with others. In addition to personal use, these applications also serve various purposes such as business, education, and trading chats. However, despite their positive aspects, there are also negative aspects to consider.

The existence of vulgarities on these platforms is a cause for concern. Students, in particular, are vulnerable to these vulgarities, and exposure to such content can lead them astray, negatively impacting their prospects. Pornographic or adult-oriented materials, for example, are often shared without regard for their harmful effects. Regular viewing of such material can cause teens to become distracted by sexual thoughts, interfering with their ability to focus on their studies and resulting in poor academic performance. Moreover, lessons may seem dull in comparison to the excitement generated by pornography, making it even more challenging to concentrate on them. To prevent such outcomes, social media applications should prohibit the sharing of such content.

II. EXISTING WORK

A. Similar chat App

In today's technology-driven era, traditional communication methods such as SMS or phone calls are being used less frequently and are being replaced by chat applications. Social media platforms have become an integral part of everyday life. Among the most popular chat applications today is WhatsApp. With WhatsApp, users have various options for communicating, including sending text messages and making phone calls. Additionally, the app allows for sharing of photos and videos.

B. Threats in chat App

The rise of social network platforms has led to unprecedented levels of connectivity among individuals. As these platforms continue to evolve at an accelerated pace, even into the era of virtual reality, our privacy becomes increasingly vulnerable to a growing number of threats. One of these threats is the proliferation of vulgar and inappropriate content, particularly in the form of shared images, which can have harmful or sexual content.

C. Literature survey

"Social Networks and Young People. Comparative Study of Facebook between Colombia and Spain", The study aims to examine the similarities and differences in the use of Facebook by young people in both countries, including their frequency of use, reasons for using the platform, perceptions of the reliability of the information, encounters with fake news or misinformation, trust in the information seen, experiences of cyberbullying or negative interactions, views on privacy and security features, encounters with offensive or inappropriate content, and perceptions of the impact of Facebook on society. The results of this survey will contribute to a better understanding of how young people in different cultural contexts engage with and perceive social networks, particularly Facebook, and inform strategies to promote safer and more positive online experiences for young people. "A Study on Positive and Negative Effects of Social Media on Society", The study seeks to gain insight into people's perceptions of the impact of social media on various aspects of society, including communication, relationships, mental health, productivity, and societal norms. The survey will explore participants' experiences with social media, including their frequency and duration of use, preferred platforms, motivations for use, and interactions with others on these platforms. It will also examine respondents' perceptions of the benefits and drawbacks of social media use, such as increased access to information and opportunities for social connection versus negative effects on mental health, privacy, and social norms. The data gathered from this survey will contribute to a better understanding of the complex relationship between social media use and society, and inform strategies for promoting healthy and positive online behavior.

"Investigation of social media security: A Critical Review", The study seeks to gather insights into users' experiences with social media security, including their perceptions of the security measures implemented by these platforms and their concerns about the potential risks of using social media. The survey will explore participants' use of social media, including the platforms they use, how often they use them, and their experiences with security breaches or hacks. It will also examine respondents' perceptions of social media security, including their level of concern about the security of their personal information on social media and their trust in social media platforms to protect their information. The data collected from this survey will help to identify the strengths and weaknesses of social media security measures and inform strategies to improve security measures and protect users' personal information. The results of this study will contribute to a better understanding of social media security, and its impact on users' trust and perception of social media platforms. "Privacy and Security Issues in Online Social Networks", The study seeks to gain insight into users' experiences with online privacy and security, including their perceptions of the risks associated with using online social networks and their use of privacy and security features. The survey will explore participants' experiences with online social networks, including the platforms they use, how often they use them, and their interactions with others on these platforms. It will also examine respondents' perceptions of online privacy and security, including their level of concern about the security of their personal information and their use of privacy and security features such as two-factor authentication and privacy settings. The data collected from this survey will help to identify the privacy and security issues faced by online social network users and inform strategies to improve privacy and security measures and protect users' personal information. The results of this study will contribute to a better understanding of the complex relationship between online social networks and privacy and security, and inform strategies to promote safer and more positive online experiences for users.

"Risks Associated With Posting Content on Social Media", The study seeks to gain insight into users' experiences with social media content sharing, including their perceptions of the potential risks and consequences of sharing content online. The survey will explore participants' use of social media platforms, including the frequency and duration of use, and the types of content they share. It will also examine respondents' perceptions of the potential risks associated with sharing content on social media, including risks to personal privacy, reputation, and safety. The survey will further investigate participants' experiences with negative consequences resulting from content sharing on social media, such as cyberbullying, online harassment, and damage to personal or professional reputation. The data gathered from this survey will contribute to a better understanding of the risks associated with sharing content on social media and inform strategies to promote safe and responsible content sharing practices. The results of this study will help to identify the most significant risks associated with social media content-sharing and inform strategies to mitigate these risks and promote positive online experiences for users.

"Development of Chat Application", The study seeks to gain insight into users' experiences with chat applications, including their preferences for features and design. The survey will explore participants' current use of chat applications, including the platforms they use, how often they use them, and the types of conversations they have. It will also examine respondents' preferences for chat application features, such as the ability to send multimedia files, group chat functionality, and integration with other platforms. The survey will further investigate participants' opinions on the design and user interface of chat applications, including the layout, colors, and ease of use. The data gathered from this survey will inform the development of a chat

application that meets the needs and preferences of its target audience. The results of this study will help to identify the most desirable features and design elements for a chat application and inform strategies to improve user engagement and satisfaction.

D. Merits and Demerits of Existing Chat App

The existing social media applications also include authentication, secure content sharing, media sharing, etc. The thing that it doesn't include is sharing harmless media content.

Merits*:*

- Networking without border
- Instant Information
- Great marketing channel for Business
- Exchange of ideas and Collaboration

Demerits:

1. There is no option available to block specific users from viewing your profile.
2. Messages are not delivered to the regular mobile phone inbox.
3. There is a risk of unauthorized access to personal messages, causing problems in personal relationships.
4. Previously, the limit for group members was 256, but it can now be increased to 3000 by changing a few settings.
5. Frequent message notifications can be irritating to some individuals.
6. Your profile picture is visible to anyone who has your contact number saved on WhatsApp.
7. WhatsApp has addictive qualities, particularly among school children, and breaking free from addiction can be challenging.
8. You must share your phone number with those you wish to communicate with on WhatsApp.

III. PROPOSED WORK

This Application is developed with the factors that ensure the user's privacy and helps in making secure conversations.

Image Moderation:

Image moderation is a type of content moderation that aims to screen out images that are deemed explicit or unsuitable for a brand's social media platform. The number of images that are assessed by the image moderation system is considered the measure of image moderation. The image moderation process functions by identifying links within messages and transmitting the content of those links to our AI moderation service for analysis.

TensorFlow:

TensorFlow is a comprehensive open-source platform for machine learning that handles all facets of a machine learning system. However, in this course, emphasis is placed on using a specific TensorFlow API to build and train machine learning models. TensorFlow facilitates the creation of dataflow graphs and structures that specify how data is processed via a multi-dimensional array called a Tensor. This permits you to design a series of operations that can be performed on the input and output values, thereby constructing a flowchart.

TensorFlow Architecture:

Tensorflow architecture works in three parts:

- Pre-processing the data
- Build the model
- Train and estimate the model

The term "TensorFlow" is derived from the fact that it receives input in the form of a multidimensional array, commonly referred to as tensors. By defining a series of operations that you want to perform on this input, you can create a flowchart, known as a Graph. The input is inserted at one end, flows through the system of multiple operations, and emerges at the other end as output. TensorFlow has gained significant recognition as the leading deep-learning library in recent years. Users of TensorFlow can create various deep-learning

architectures, such as convolutional neural networks (CNNs), recurrent neural networks (RNNs), and even simple artificial neural networks. Academics, startups, and major corporations are among the primary users of TensorFlow. Google incorporates TensorFlow in nearly all of its daily products, including Gmail, Google Photos, and the Google Search Engine.

Advantages:

- Privacy among users will be ensured
- Misleading will be avoided
- Useful and harmless to use for all age people
- No malicious content allowed

IV. SYSTEM FLOWCHART

A flowchart is a picture of the separate steps of a process in sequential order. It is a generic tool that can be adapted for a wide variety of purposes and can be used to describe various processes, such as a manufacturing process, an administrative or service process, or a project plan.

Here the Flowchart represents the flow in which the system works. This represents the flow of the Chat application which is created.
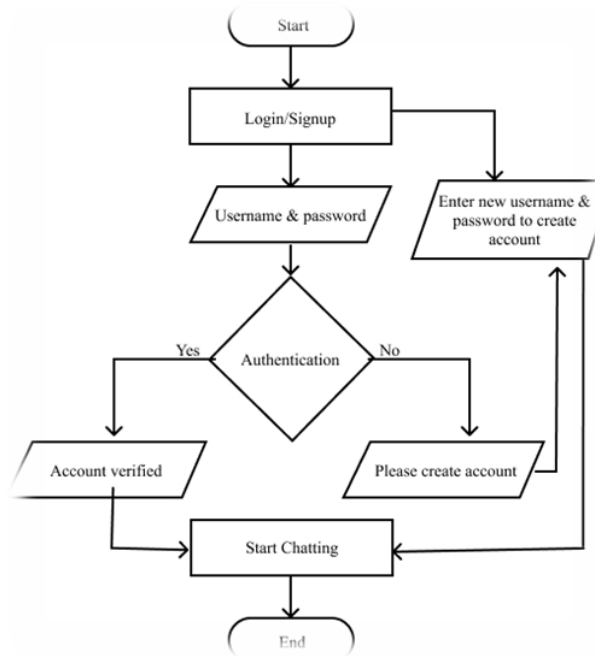
HARDWARE SPECIFICATIONS

The development workstation should meet or exceed these hardware requirements:

1. Operating System: Windows 10 or later (64-bit)
2. Processor: Core i5 (minimum)
3. Storage: RAM minimum 8GB

SOFTWARE SPECIFICATIONS

1. Flutter: A mobile app development framework used to create the front end of the chat app.
2. Flask: A micro web framework used to create the back end of the chat app.
3. Firebase: A backend-as-a-service used to store and manage user data, messages, and images.
4. Google Cloud Vision: An image analysis API used to automatically detect and flag images that contain sexual or harmful content.

5. TensorFlow: A machine learning library used to train the image analysis model.
6. NLTK (Natural Language Toolkit): A Python library used for natural language processing and text analysis, used to detect hate speech in messages.
7. OpenCV: A computer vision library used for image processing and feature extraction.
8. NumPy: A library for the Python programming language, adding support for large, multidimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.
9. Python Imaging Library (PIL): A library used for opening, manipulating, and saving many different image file formats.
10. Google Cloud Translation API: An API used to translate messages in different languages to detect hate speech in multiple languages.
11. OAuth2Client: A library used for the authentication and authorization of users.

V. MODULES AND DESCRIPTION

Authentication: A module that requires users to create an account and verify their identity before being able to access the chat feature.

Group Chat: A module that allows users to create and participate in group chats with multiple people.

Media Sharing: A module that enables users to share images and other types of media within the chat feature.

Push Notifications: A module that sends push notifications to users when they have received a new message or have been added to a new group chat.

Emoji and Stickers: A module that allows users to add emoji's and stickers to their messages for added expression.

Location Sharing: A module that enables users to share their location with others within the chat feature.

Chat History: A module that stores all previous conversations and messages, allowing users to refer back to them at a later time.

Block/Report feature: A module that allows users to block or report other users who are behaving inappropriately or breaking the terms of service.

Encryption: A module that encrypts all messages and conversations, ensuring that they are secure and private.

Image Moderation: A module that uses artificial intelligence and machine learning algorithms to automatically detect and flag images that contain sexual or harmful content, such as nudity, violence, or hate speech.

Screenshot Restriction: A module that restricts taking screenshots without request acceptance.

IMPLEMENTATION OF MODULES

- Flutter (Front-end)
- Django (Back-end)
- Firebase (Serverless stack)
- Firestore (Database)
- REST (API)

Flutter: Flutter is a versatile UI toolkit developed by Google, designed to create visually appealing, native applications for mobile, web, and desktop using a single codebase. This powerful toolkit seamlessly integrates with existing codebases and is widely adopted by developers and organizations worldwide. Additionally, Flutter is free and open-source software.

Django: Django is a Python-based web framework that allows for the speedy creation of secure and easily manageable websites. Developed by seasoned professionals, Django simplifies many of the complexities

involved in web development, freeing you to concentrate on developing your application instead of dealing with mundane tasks.

Firebase: Firebase furnishes thorough documentation and cross-platform software development kits (SDKs) that facilitate the creation and deployment of apps across a multitude of platforms, including Android, iOS, the web, C++, and Unity.

Firestore: Cloud Firestore is a document-oriented NoSQL database that simplifies the process of storing, synchronizing, and retrieving data for your mobile and web applications, all while scaling globally.

REST: A REST API is a secure communication interface utilized by two computer systems to exchange information over the internet. The majority of business applications require communication with internal and third-party applications to accomplish various tasks.

VI. SYSTEM ARCHITECTURE
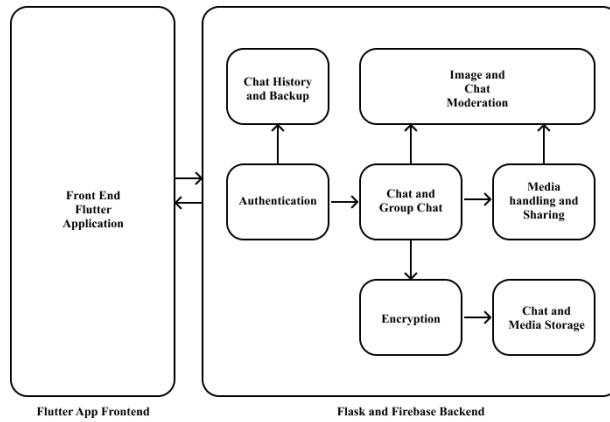
The working architecture of the chat application is represented using the diagrammatic format. For the front end of the application, flutter is used. After authentication, the user is allowed to chat. The chat can be personal or a group chat. The user can also share their media files. The media files undergo image moderation and after that will be sent. All the chats will be stored in the chat history.

VII. FIGURES AND TABLES

The ratings of sexual content showed a significant main effect of gender, with females rating compared to males. Table 1 provides a summary of the mean ratings by males and females.

Table 1: Mean (SD) ratings of explicit content, by males and female

Rating of:	Males Mean (SD)	Females Mean (SD)
Sexual content—funny	3.53 (1.80)	2.04 (2.02)
Sexual content—exciting	2.75 (1.85)	1.08 (1.43)
Sexual content—disturbing	3.32 (1.49)	4.56 (1.66)
Violent content—funny	1.55 (1.66)	0.71 (1.35)
Violent content—exciting	1.42 (1.62)	0.60 (1.13)
Violent content—disturbing	4.21 (1.83)	4.99 (1.72)

This application presents a table featuring a rating of zero, indicating that there will be no impact on the sexual content generated.

Table 2: Mean (SD) ratings of explicit content, by males and females by using this Application.

Rating of:	Males Mean (SD)	Females Mean (SD)
Sexual content	0	0
Violent content	0	0

Figure 1: Social Networking reach year on year
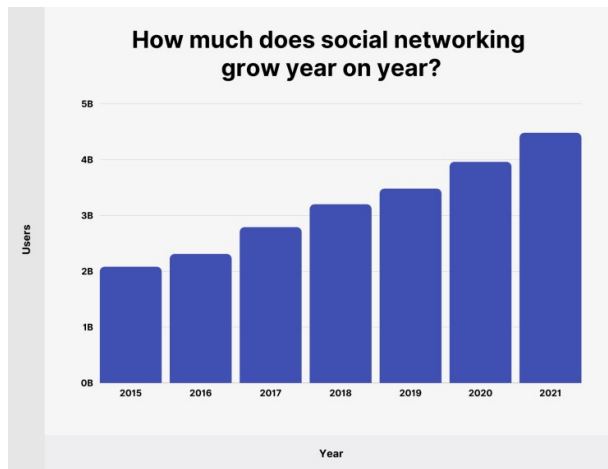
Social networking has been growing exponentially in recent years. According to Statista, as of 2021, there were 4.33 billion social media users worldwide, which is roughly 55% of the world's population. Furthermore, it is projected that the number of social media users will continue to increase in the coming years, with an estimated 4.4 billion users by 2025. This growth is primarily driven by the increasing availability of internet access and mobile devices worldwide. However, with the growth of social networking comes the need for increased security in content sharing. The ease and speed of sharing information on social media platforms make it convenient for people to share personal information, opinions, and photos. However, this can also lead to privacy concerns, cyberbullying, identity theft, and other security issues. It is essential to ensure that the content shared on social media platforms is secure and protected from unauthorized access. It is important to educate users on how to protect their personal information and use privacy settings to control who can see their content. Social media companies also have a responsibility to ensure that their platforms are secure and that user data is protected. By prioritizing security, social networking can continue to grow and provide a valuable platform for people to connect and share information while protecting their privacy and security.

VIII. CONCLUSION

In this work, we proposed the Chat application which provides privacy and security among users by prohibiting sharing of harmful content that is sexual content. This project will improve the usage of applications with the help of secure content sharing with safety. In this, sexual content sharing is prohibited with the help of the above-mentioned tools. This chat application will also ensure the safety and security of students who are using this application.

In conclusion, a platform for sharing and collaboration on sensitive content with advanced permissions and access control for users is crucial for organizations and individuals that deal with sensitive information. The platform can provide a secure environment for users to collaborate and share sensitive content, while also ensuring that access is limited to authorized individuals. With advanced permission settings, users can control who can access, modify, or delete content, reducing the risk of data breaches or unauthorized access. This platform can improve the efficiency and security of sensitive data management, while also enhancing

collaboration and communication between teams. By implementing such a platform, organizations and individuals can protect their sensitive information and maintain confidentiality, which is critical for maintaining trust and credibility in today's digital age.

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