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Comparing the Use of Short Video Sharing Applications for Optimizing User Engagement

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***Abstract*—Since the COVID-19 Pandemic outbreak and the accompanying lockdown, the short film business has seen an unparalleled transformation. Young people have a platform thanks to the software to express themselves through lip-syncing, dancing, humour, and singing. Users can also create movies and upload them to their social networks. Get access to a brand-new, sizzling stage where you may wow the world with your fiery ability while watching never-ending fascinating videos. Every day, people face problems while discovering new and fresh skills. On the app, anyone from anywhere in the world can meet intriguing individuals and enjoy amusing short movies. One of the technologies that has fundamentally altered the social networking industry is artificial intelligence (AI) [1]. Artificial intelligence is the ability of computers and other machines to learn, comprehend, and make judgments similarly to humans (AI) [2]. The programme essentially relies on AI and ML technology in two ways. Both from the producer's and consumer's perspectives. This study examines how SpotLight continuously enhances user engagement through the usage of AI and ML.**

***Index Terms*—Social networking, Video Sharing Artificial, Intelligence (AI), Machine Learning (ML), Consumer behavior, Technology**

I. Introduction

A social media site where users can upload, share, and find short videos. There has been a large void in the market for a competent video-sharing software since the wildly popular TikTok was outlawed. Since then, a number of other applications have replaced TikTok, with Josh being the most well-known. On Google Play Store, the Josh app has already received more than 3 million downloads. The app offers a tonne of fun feature options for editing and taking photos and videos. Gamification is the use of game design concepts from video games, board games, or sports in non-game contexts like marketing, employee engagement, and training. The goal is to improve a current system, not to design a game. Instead of the other way around, gamification features are built into designs [1], [3].

There are a tonne of video sharing programmes accessible right now. The decision ultimately depends on the person sharing the video because every application has advantages and disadvantages just like anything else. However, the majority opt for the YouTube app. It is the best video sharing and viewing application in the globe and is easy to use and navigate. With any current device, you can access this programme by downloading it or by searching for it directly in your web browser. A limitless number of users can watch this video because each user has access to their own channel(s) where they can publish their videos. Additionally, uploading content to YouTube is free, and the more subscribers and views your videos receive, the greater your potential of making money from it. Any video on Youtube can be saved, added to a "see it later" playlist, liked, or disliked. Now that YouTube offers a live option, you may live stream directly to the application. This allows ever-popular YouTubers to engage with their audience and perhaps draw in new ones. The visibility that video sharing has generated for platform development globally does factor into the benefits and drawbacks of using these services. We may examine our behaviors to determine why we utilize the services that we do by using the lists that are supplied, which highlight the benefits and drawbacks of video sharing. An overview of the paper is as follows. To be precise Section II give a brief overview of different types of digital platform, to explore the creativity and knowledge in addition with AI. Section III highlights the basic applications used to enrich the content of the videos where Section IV explore the new features in some more detailed manner. In Section V basic architecture of the applications is mentioned and Section VI deals with the concept of ML algorithm and models used to create the short videos. After explaining the marketing strategy of those short videos in Section VI ,Section VIII concludes the concept of the paper

II. Background of the Study

Our mission is to capture and present the world's creativity, knowledge, and moments that matter, directly from the mobile phone/ any device with an internet connection. The application enables everyone to be a creator, and encourages users to share their passion and creative expression through their videos. The

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power of AI has also proven to be a bane for its users and investors.

A viewer usually seeks for quality content. They even look for platforms with plenty of material and innovative ideas. Usually, creators are motivated by two factors: money and fame.They continually seek out platforms with a low entry barrier and satisfaction right away. Due to its utility, dependability, and ease of accessibility, using the Internet has become a daily activity for people in today's generation, whether it be for business, education, news updates, or leisure. As one of the simplest instruments for communicating with others, it provides practically all of the information that a person would need or desire to know [4].

The development of this technology has led to educational activities occurring in online communities where users can share knowledge. Web 2.0, a platform that also gave rise to social media, is where the sharing of content among users in online communities all originated. An illustration of this is the short-video platform, which not only offers social media features but also lets users upload and browse short videos. This platform's representative is Tiktok. In order to expand and improve the learning experience of its users, this study intends to provide insights into the usage of short-video platforms and how it supports collaborative learning.

In this current and technologically evolved world, almost everyone spends a lot of time using their newest phones, tablets, or computers to view websites without realizing the great tool that is behind that. Web 2.0 refers to the technology and online services available in this age. Websites for social networking, blogs, communication tools, wikis, and folksonomies are all part of the so-called Web 2.0. This application platform is regarded as lively and extremely engaging because it provides users with services that are focused on content sharing. Web 2.0 has given rise to a number of well-known programmes, including Instagram, YouTube, and Twitter. Through this platform, online users can collaborate to generate information and input and to enhance knowledge sharing throughout the Internet community [5].

III. Features in short-video sharing applications

The application allows you to add special effects to your videos and selfies and create quick videos for your viewers and admirers with the thousands of stickers and emoticons available. Using Magical filters, you can add effects to unique music videos and have them sync to the beat of the song. You get to share engaging, high-caliber videos with your fan bases to find and showcase your skills to a wider audience. Features such as the ability to edit videos, full-featured camera filters, and much more are provided. By making quick movies using the app, you can instantly become the next online celebrity. One can have fun in boring times. New marketing tools for shoppers. For small shoppers who can not make TV advertisements or get celebrity endorsement which needs lots of money, the application is a new way of making marketing campaigns [6]

IV. Some possible new ideas in this field

Using polls and challenges, new categories will be added : The simplest approach to enhance the amount of material on the site is to add a new category. Many of the users I spoke with noted this issue as well. The ability to find the precise kind of information one is seeking for is one of the key elements for consumers to adopt a certain platform. However, creating a new category entails unique difficulties, such as: You must reach a particular level of videos in order to fully introduce a clearly defined category on the platform. If you only rely on bringing on board more creators in that category, it can be difficult to reach that barrier. Additionally, if the content is redundant (and already available on other platforms), no user will bother signing up for this platform. Because of this, using polls and challenges to generate several movies for a given category is the most natural method. To do this, follow these steps: Decide which categories you want to introduce first, and limit the list to only 3. Introduce a poll asking people which category they would like to see on the platform after that. After the users have chosen the category. By working with businesses in that specialized market, release a challenge in that category. Users will be encouraged to make videos for that specific genre as a result. Additionally, spreading the challenge across many platforms will boost user onboarding.You will eventually cross the necessary threshold.

Gamifying the Challenges : Users can be engaged most easily through challenges, and the larger the incentive, the better the participation rate. Josh is associated with many different brands, and these brands seek out Josh as a high-class influencer to market their goods. Because of this, only PGC creators can profit from these brand relationships. A gamified challenge on the app is the greatest approach for marketers to advertise their product and to offer competing producers a fair shot. like what Tiktok is carrying out. One can produce a gamified branding impact using AR and VR filters. Not only will this bring in additional sponsors to the platform, but it will also encourage viewers to start contributing material and taking part in fun activities [7], [8].

V. Basic Architecture of the applications

Big data frameworks, machine learning, and microservices architecture make up the three parts of the application recommendation system's architecture. The system's starting point is a big data framework. It offers data processing, data computing, and data storage in real-time.The brain of the recommendation system is machine learning. To create models and generate suggestions that are tailored to each person's interests, a variety of machine learning and deep learning methods and approaches are used. Microservices architecture is the foundational technology that enables a system to operate quickly and effectively.

A. Big Data Frameworks in Applications

The consumers' smartphones account for the majority of the data. That comprises the operating system, installed applications, etc. The application pays close attention to user

activity logs, including watch time, swipe, likes, shares, and comments.Through scribe and flume, the log data are gathered and consolidated. The Kafka queue receives them through a pipe. Then, along with other elements of the Apache Hadoop ecosystem, Apache Storm processes data streams in real time.A distributed system for data processing and storage is the Apache Hadoop ecosystem. This contains the original distributed data processing system, MapReduce. It does batch processing and parallel data processing. YARN is a framework

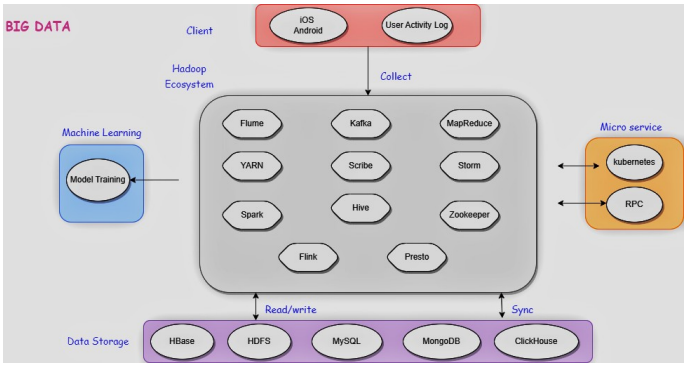

Fig. 1. Big data framework in short- video sharing applications

for managing cluster resources and scheduling jobs. A distributed file system is HDFS. Large tables can store structured data with the help of the scalable, distributed database HBase. Hive is an infrastructure for data warehouses that offers data querying and summarization. A high-performance coordinating service is called Zookeeper.

The real-time data processing frameworks enter the scene as data quantities rapidly increase. The third generation framework for near real-time distributed processing for big data workloads is Apache Spark. Spark improves MapReduce's performance by handling the processing in memory. There are numerous database systems, including MySQL and MongoDB.

B. Machine Learning in short-video sharing applications

This is the main mechanism by which it became known as having a "hyper-personalized, addictive algorithm". Following the influx of enormous datasets, content analysis, user profiling, and context analysis come next. Computer vision and natural language processing are performed using neural-network deep learning frameworks like TensorFlow (NLP). Computer vision will interpret photos and videos of images. Classification, labeling, and assessment are all part of NLP. The traditional machine learning algorithms are employed, including gradient boosting decision trees, convolutional neural networks, logistic regression, and recurrent neural networks (GBDT). Common recommendation techniques are used, including advanced matrix factorization, collaborative filtering, and content-based filtering (CBF) (MF) [9].

Its covert methods for reading your mind include: Platform for experimenting with algorithms: Engineers test combining different machine learning algorithms like LR and DNN.

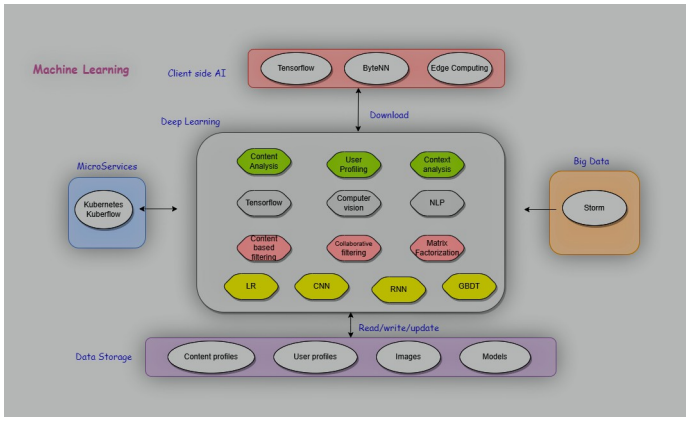

Fig. 2. Machine Learning in short-video sharing applications

Run the A/B test after which you make the modification. Comprehensive categorization and labeling: In addition to the frequently used likes or shares, the models are based on user activity such as watch time and swipes (not what you say in public eyes, but what you do as reflection of your subconscious says more about you). More user attributes, vectors, and categories are available than in most global recommendation systems. And they continue to add more. User feedback engine: It modifies the models following several iterations of retrieving user feedback. This engine serves as the foundation for the experience management platform, which ultimately enhances the recommendations and permutations.

Utilizing the recall approach, the cold-start problem in recommendations is resolved. From among the tens of millions of videos that have been deemed to be both popular and high-quality, hundreds of applicants will be chosen. For a really quick reaction, some AI work has been transferred to the client side in the meantime. This involves training in real-time, modeling, and reasoning done on the devices in smaller sizes. On the client side, machine learning frameworks like TensorFlow Lite or ByteNN are employed [10].

C. Microservices Architecture in short-video sharing applications

The recommendation components that serve as APIs include user profiling, predictions, cold-start, recall, and user feedback engine. The services are housed in cloud platforms like Microsoft Azure and Amazon AWS. The system's output, video curation, will be delivered to users over the cloud.It uses containerization technology that is based on Kubernetes. The term "container orchestrator" refers to Kubernetes. It is a package of tools for automating the life cycle of programmes. Machine learning workflow installations on Kubernetes are the only focus of Kubeflow. Service mesh is an additional tool for managing service-to-service communication that is a component of the cloud-native stack. It regulates the data sharing between various application components. Instead of at the application layer, it introduces features or services at platform

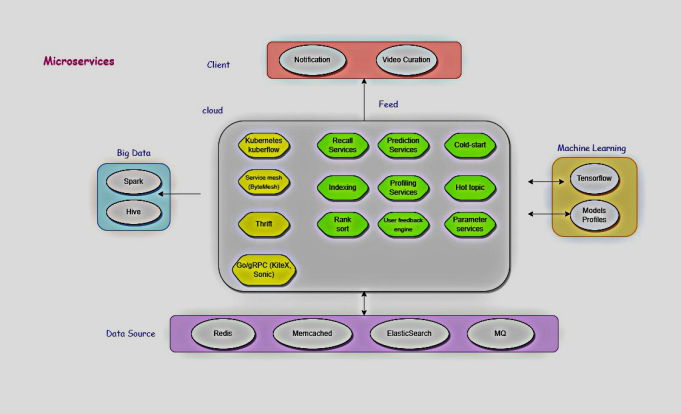

Fig. 3. Microservices Architecture in short-video sharing applications

layers.The services were created using Go and gRPC due to the need for high concurrency. Due to its strong network and concurrency capabilities built-in, Go has taken the lead in service development on TikTok. A framework for Remote Procedure Control called gRPC makes it easy to create and connect services.

Tiktok's success is a result of their willingness to go above and beyond to offer the finest user experience. They create their own tools to enhance low-level performance (system-level). For instance, ByteMesh is an upgraded version of Service Mesh, KiteX is a high performance gRPC framework written in Golang, and Sonic is an improved JSON library written in Golang. To name a few other internal tools or systems, there are parameter servers, ByteNN, and abase [11].

VI. Machine Learning algorithms and models in short video sharing social media application

It applies an ML algorithm at almost every stage of their content strategy to provide timely and useful data. The movie is examined using three criteria: computer vision, natural language processing (NLP), and metadata as the initial phase in its recommendation technique.Computer vision is a type of deep learning (a subset of machine learning) that employs neural networks to recognise objects in still or moving images. The computer vision programme can distinguish new images based on particular attributes and characteristics thanks to a library of millions of annotated photos. It makes it possible for the algorithm to view and comprehend the content of the videos that are being produced.It examines facial features, objects, and other human characteristics using computer vision.

On the For You feed, its recommendation mechanism is featured. One type of information it employs to forecast a fruitful user engagement is video classification and categorization. The majority of their data is gathered from user-generated interactions on the app. The organization has the chance to examine the watch time and replay rate of specific videos thanks to its short form video content. When users start the app, they will get a selection of videos on various subjects. A new stream of videos will be curated based on how the viewer engages with each video (re-watches, likes, shares, or ignores). Its system can then apply content-based filtering depending on the user's first engagement to display them more pertinent movies. Using content-based filtering, new content is examined for similarity.

From the consumers side, it uses AI to determine which content will be the best fit for the audience's (consumers) needs. Customers don't even have to enter their preferences when using the app. AI will procure a sizable database on customer behavior on its own. From the content

creators side, by enhancing the virtual videos with music, filters, and other features, it will assist content creators in building their virtual videos [2].

VII. India's short form video market

There are a lot of short form videos. There is no denying the proliferation across platforms, including Facebook, YouTube, and Instagram, and it is quite likely to continue in the years to come. In fact, practically every big social media app now has a function for short videos, which were made popular by TikTok. In fact, Instagram is moving toward becoming a video and entertainment platform with Reels, its own take on the short video format.

In India, the major firms, such as Google and Facebook, are betting on short form videos. By 2025, 650 million people are expected to be using the market, according to a recent estimate by Bain & Company. Bain & Company examined the expansion of short form videos in India, the major participants, and the outlook in the report titled "India Online Videos - The Long and Short of It." Short form videos, also known as SFVs, are defined as videos that last between 15 and 2 minutes.

SFV is one of the most effective outcomes of the epidemic, which has undoubtedly increased content consumption. Over the past two years, the number of SFV users in India increased by 3.5 times and the sum of all user time by 12 times. More than 200 million Indians viewed SFVs at least once in 2020 alone. Additionally, active users devoted up to 45 minutes each day on SFV platforms alone. When compared to January through March of the same year, SFV consumption increased by 60% during the lockdown period (April through June). In India, there are currently more than 200 million SFV users.

Men (70%–75%) from tier 2 cities and smaller towns have made up the majority of India's SFV users, while women make up 25%–30%. The majority of users are under the age of 25, with 20to 25% between the ages of 25 and 35. India is thought to have a chance to defeat leader China. With affordable internet connection, simple platforms, and local languages, India's SFV market is only expected to grow. According to Bain & Company, by 2025, 60% of internet users, or 600–650 million Indians, will watch such films, with each user spending an average of 55–60 minutes each day on these platforms. It is also expected that from 12 billion hours, the total time spent watching short videos will increase to 80–90 billion hours. Despite a burgeoning business, Bain & Company claims that the Indian SFV market is still in its infancy. highlighting five key trends: the establishment of a strong creator ecosystem,

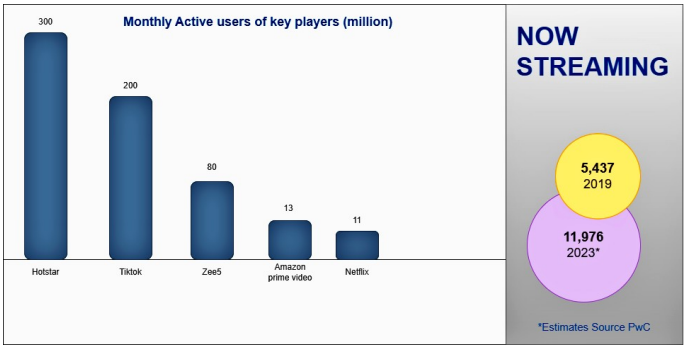

Fig. 4. Census of usage of short-video sharing applications

monetization, innovations to attract the next wave of viewers, niche platforms within bigger SFV ecosystems.

India is also anticipated to follow in the footsteps of China or the US, two of the largest SFV markets. China is home to several tiny platforms and two of the world's top SFV players, Douyin and Kuaishou. On the other hand, the SFV market in the US is spread out across a variety of channels, including social media, long form video (YouTube), and TikTok [12].

VIII. Conclusion

The basic idea of the app is to give users a tool to share their creativity , knowledge and precious life moments with the aim to help content creators.The purpose of this study was to determine the consumer's level of awareness, preferences, and feelings of satisfaction. The targeted users include dancers, comedians, vloggers, food vloggers, DIY Artists and Big name brands. The application provides rich video content and encourages its creators to be much more creative. The younger generations, sometimes known as "digital natives," who have a natural affinity for technology, have kept pace with technological breakthroughs.

Therefore, it's crucial to figure out how to communicate with younger generations, who will create society in the future, and educate them about AI in quick, easy, inventive, and creative methods. We want to arouse interest and illuminate artificial intelligence by capturing solutions in 60-second movies (or less!). Our intention is for viewers of the AI for Good TikTok film to reflect on artificial intelligence, how it is already altering their lives, and its promise for the future. The application of ML shows the strength that strong algorithms and good data can have in directing users to the content they want to consume. Briefly said, the app is a fun, amusing, and addictive one that has gained a lot of traction. It has the potential to develop into the upcoming major social networking and marketing platform.

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