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Blockchain-Based Social Networking Model Empowered by Non-Fungible Tokens

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Abstract: *In the current digital landscape, almost everyone is on social media or various social media platforms. People use social media for a plethora of purposes, which include staying connected with friends and family, accessing information and updates about ongoing events, entertainment, networking with professionals, expressing themselves to a wide range of users, promoting businesses, joining online communities and engaging in various activities which has led to an increase in the consumption and usage of online social networks (OSN). One of the reasons for such a growth is their features such as ubiquitous access, on-demand service, friendship networks, user engagement strategies like recommendation engines, etc. However, there are various limitations to the current approach, such as the centralization of control, lack of data ownership, poor access control, fake news, bot accounts, censorship, digital rights management issues, etc. This paper aims to develop a social media application where every post can be converted to a Non-Fungible Token (NFT) and be sold to earn money..*

Keywords: Social Network, Database, Cloud Service Providers, Block Chain, Non-Fungible Token (NFT), Online Social Network (OSN)

I. INTRODUCTION

The way the modern world appears and operates has been greatly influenced by social media applications. This has created new avenues for becoming well-known. A case in point is the ascent of American YouTuber James Stephen Donaldson, popularly known as “MrBeast”. He is well-known for his high-production, fast-paced YouTube videos intricate tasks and substantial prizes. Over 350 millions people have subscribed to Mrbeast’s YouTube channel [1]. Social media applications enable access-controlled or subscriber/publisher models to facilitate social interaction between users and content consumption. Security threats also develop in tandem with rising demand. This implies that security measures need to be given more attention to lessen potential dangers [2]. It is imperative to develop a robust infrastructure that facilitates the utilization of blockchain technology. The social media platforms ought to be designed to fully utilize all of the benefits and capabilities that blockchain technology has to offer. The foundation of current social networking applications is a centralized data center. Centralized systems come with advantages and disadvantages. While centralized server deployments give organizations more control over user data, customers often complain about not having enough ownership of their data. Current social media applications have also caused issues like copyright violations and privacy concerns. This research presents a novel methods of a social media application that combines a through reputation system with an NFT marketplace.

II. LITERATURE SURVEY

[1] TITLE: An overview of blockchain online social media from the technical point of view
AUTHOR: B. Guidi
YEAR: 2021
DESCRIPTION: Social media is becoming one of the dominant ways to communicate. Before social media, people were extremely limited in their means to interact with others, and they were limited largely to the people that they knew in person. However, this impact on people in real life has damaged privacy. We analyze real data by exploiting one of

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the most well-known Dapps sites, and we compare current technologies in order to highlight which ones can be better applied to a real social scenario, such as Facebook.

Social media is rapidly evolving, and the widespread use of social media has changed the way people communicate. However, this change is not necessarily positives. Several issues concerning privacy, fake news, and censorship have arisen.

[2] TITLE: The application of blockchain in social media: A systematic literature review

AUTHOR: M. A. Hisseine, D. Chen and X. Yang

YEAR: 2022

DESCRIPTION: Social media has transformed the mode of communication globally by providing an extensive system for exchanging ideas, initiating business contracts, and proposing new professional ideas. However, there are many limitations to the use of social media, such as misinformation, lack of effective content moderation, digital piracy, data breaches, identity fraud, and fake news. In order to address these limitations, several studies have introduced the application of Blockchain technology in social media. Blockchains can provides transparency, traceability, tamper-proofing, confidentiality, security, information control, and supervision. This paper is a systematic literature review of papers covering the application of Blockchain technology in social media. To the best of our knowledge, this is the first systematic literature review that elucidates the combination of Blockchain and social media. Using several electronic databases, 42 related papers were reviewed. Our findings show that previous studies.

Social media invoke digital platforms reachable by the internet and permit users to from and interact in virtual groups. People can easily share information, which greatly strengthens communication and contact. They can find old classmates and acquaintances, connect with novel groups, or find persons with similar attractions across political, financial, and geographic boundaries. Thus, social media enable millions of internet users around the world to exchange information. The publication of false content, discussions around restricted or unrestricted dialog, compromised confidentiality, and political restrictions.

[3] TITLE: Proposal on NFT minter for blockchain-based art-work trading system

AUTHOR: R. Vairagade, L. Bitla, H. H. Judge, S. D. Dharpude and S. S. Kekatpure

YEAR: 2022

DESCRIPTION: NFT is an abbreviation for non-fungible token, which indicates it cannot be replaced or interchanged due to its unique features. It is just a digital asset which symbolizes online collectibles such as art, music, and games and is protected by an authentic certificate generated by the block-chain technology that underpins cryptocurrency. The most important use of NFTs nowadays is in digital material. NFTs boost content producers' revenues by powering a creator economy in which artists cede ownership of their work to the networks they use to advertise it. Keeping in mind we have developed a system where one can mint the desired artwork directly from the web app which is automatically added to his OpenSea marketplace with his metamask wallet address which he will be use to create the account on OpenSea. The artwork will spontaneously be visible in my collection section of OpenSea from where the person can do many things including the change in the price of Artwork (NFT) he owns and release it on sale or take it out for auction. Also, details like elements of the artwork and contract address are also available which provides access to view all the activities performed by that particular NFT.

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III. SYSTEM ARCHITECTURE

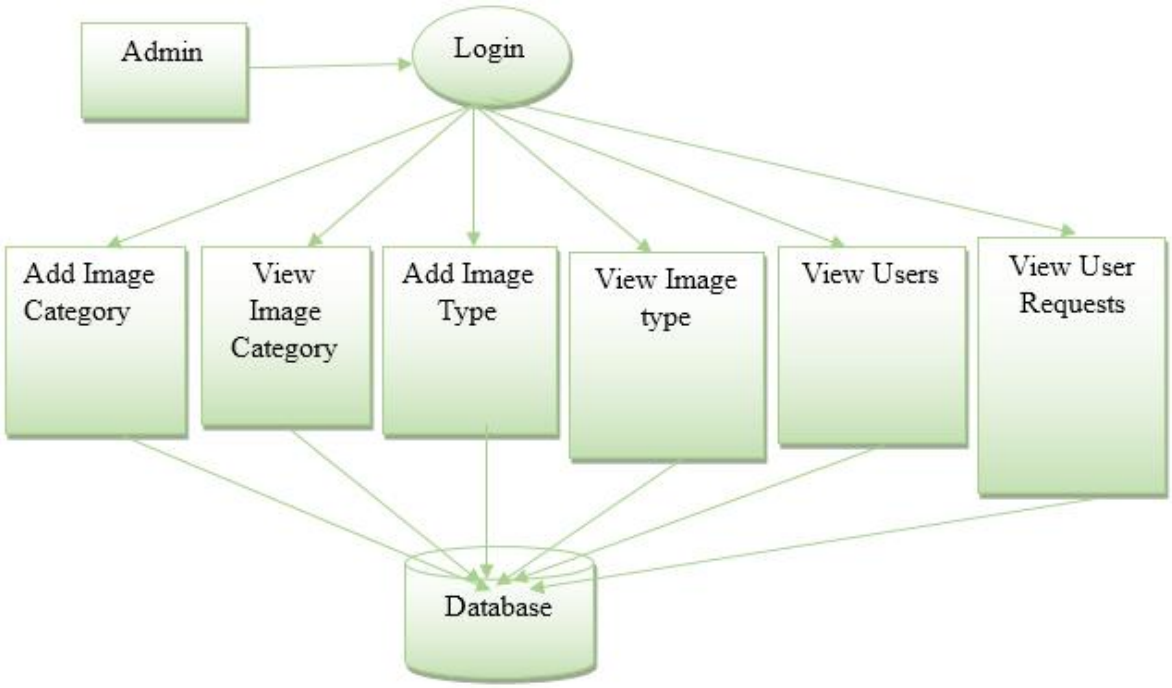

Fig: SYSTEM ARCHITECTURE

3.1 Methodologies

3.1.1 Module Overview

This project having the following 4 modules:

- User Interface Design
- Admin
- User
- The learning algorithm Decentralized identity

3.1.2 Module Descriptions

User Interface Design

In this module we design the windows for the project. These windows are used for secure login for all users. To connect with server user must give their username and password then only can able to connect the server. If the user already exits directly can login into the server else user must register their details such as username, password and Email id, into the server.

Admin

An admin, or administrator, is a user with special privileges to manage and oversee a system, website, or platform. Admins have access to setting that allow them to control user accounts, monitor activities, and enforce security measures.

User

This is the third module in our project where our proposed algorithms will take effect basing on the data collected from the users. The functionality of the users in our projects are listed below. In order to register in the site first user should send a request to admin for which the acceptance mail will be sent by the admin to the user, which consists of username and a secret key.

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The learning algorithm of Decentralized Identity

After data collection, in data pre-processing process, we filter out users that have less rating records and social links. We also filter out images that have less records. This leads to a smaller but denser dataset. Please note that the number of images is much more than that of the users. This is consistent with the observation that the number of images usually far exceeds that of users in social image platforms, as each user could be a creator to upload multiple images.

3.2 Technique

A blockchain-based social networking model empowered by non-fungible tokens (NFTs) can create a decentralized, user-driven ecosystem where individuals have greater control over their data, interactions, and monetization opportunities.

3.4 Design and Workflow modeling

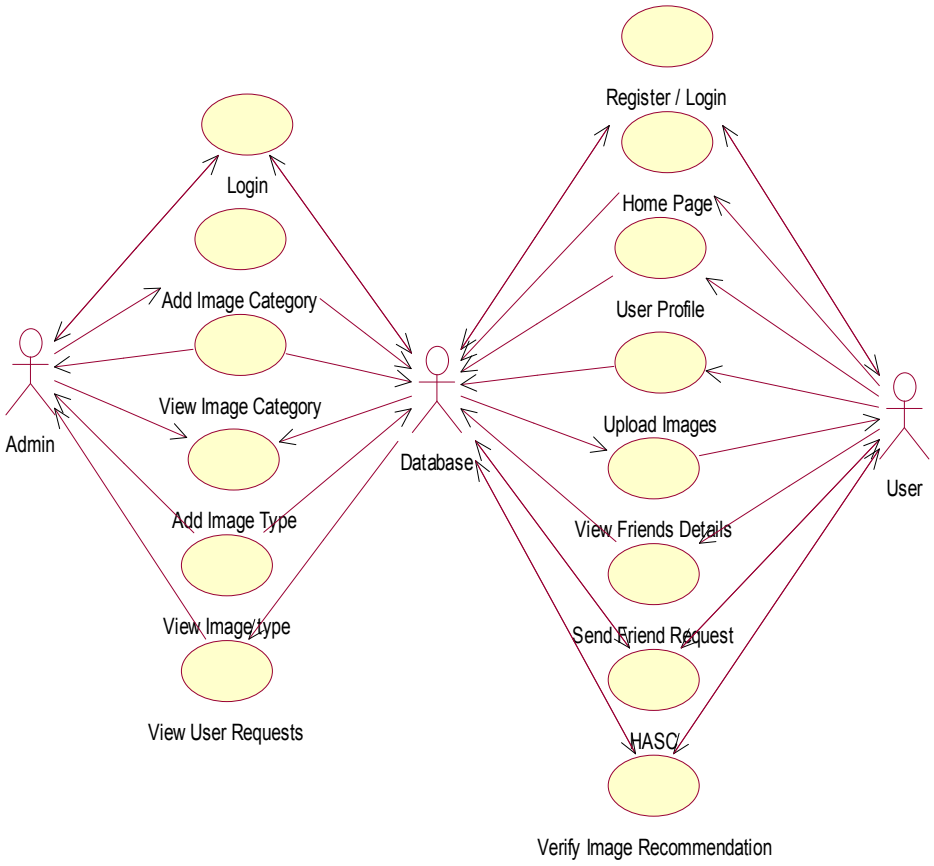

Fig. USE CASE DIAGRAM

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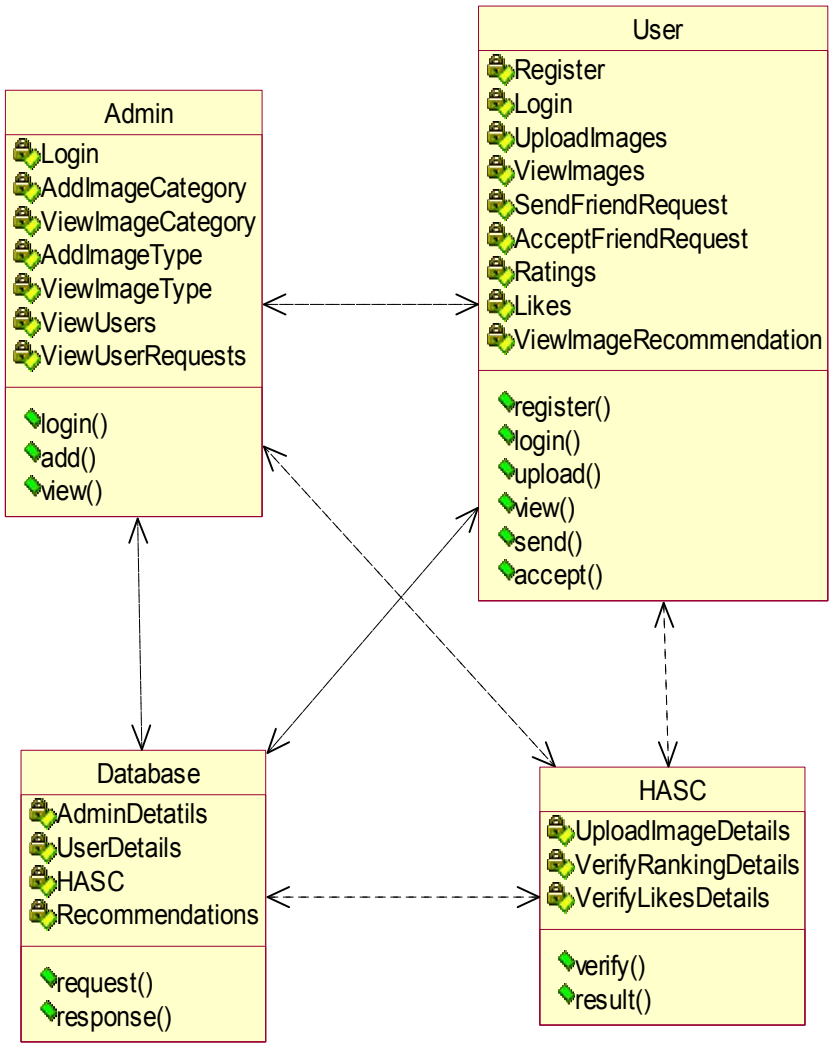

Fig. CLASS DIAGRAM

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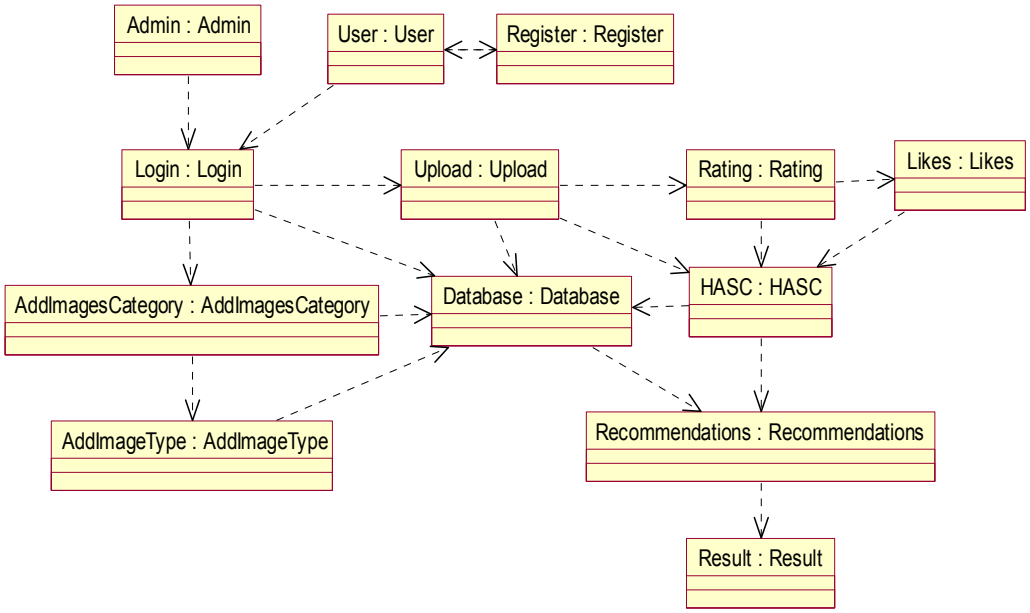

Fig. OBJECT DIAGRAM

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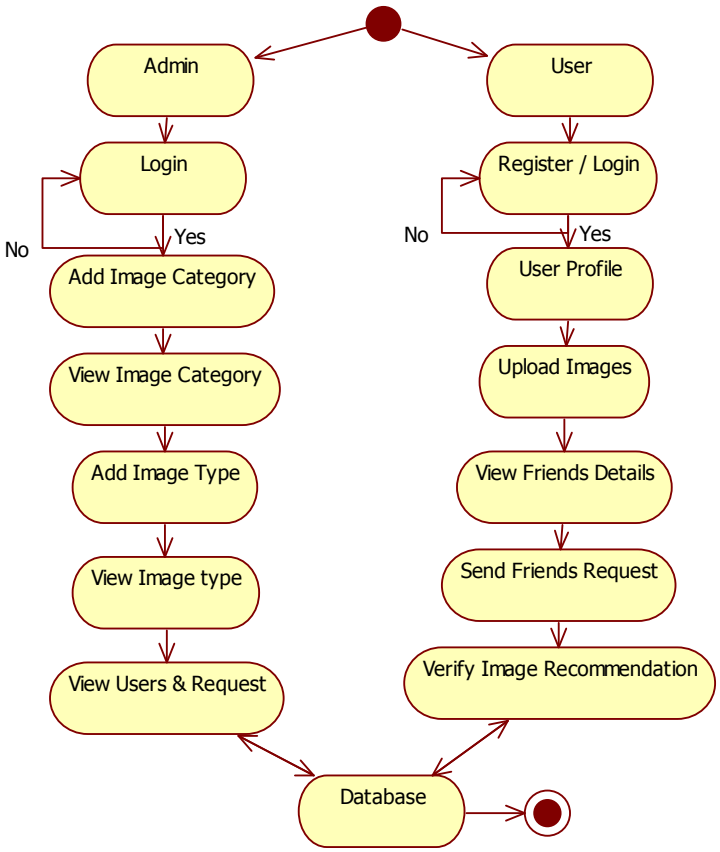

Fig. ACTIVITY DIAGRAM

Design Engineering deals with the various UML (Unified Modeling Language) diagrams for the implementation of project. Design is a meaningful engineering representation of a thing that is to be built. Software design is a process through which the requirements are translated into representation of the software.

In the USE CASE DIAGRAM, the main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted. The above diagram consists of user as actor. Each will play a certain role to achieve the concept.

In CLASS DIAGRAM, it represents how the classes with attributes and methods are linked together to perform the verification with security. From the above diagram shown the various classes involved in our project.

In OBJECT DIAGRAM, it tells about the flow of objects between the classes. It is a diagram that shows a complete or partial view of the structure of a modeled system. In this object diagram represents how the classes with attributes and methods are linked together to perform the verification with security.

In ACTIVITY DIAGRAM, are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. It can be used to described the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.

IV. RESULTS AND DISCUSSION

This project is implements like web application using COREJAVA and the server process is maintained using the SOCKET & SERVERSOCKER and the design part is played by cascading style sheet.

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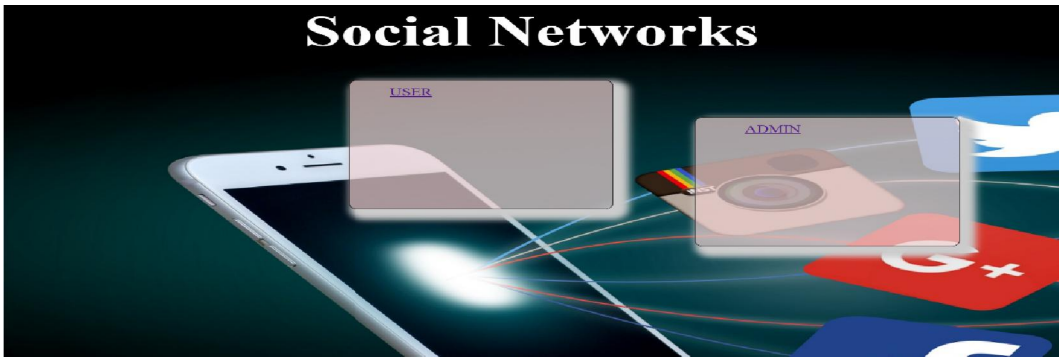

Fig.1.1 Home Page

Fig.1.2 Admin Login

Fig.1.3 Admin Home Page

Fig.1.4 User Login

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Fig.1.5 User Home Page

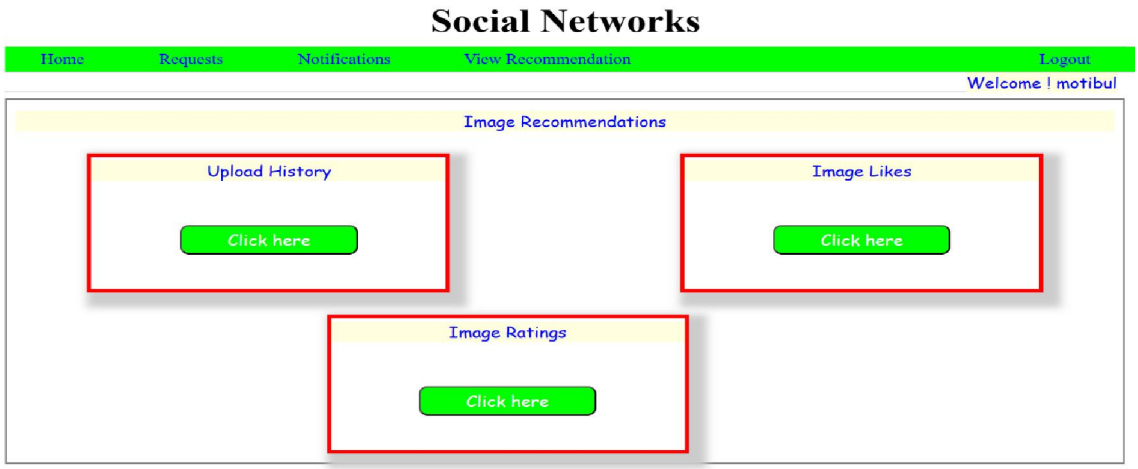

Fig.1.6 User Image Recommendation

V. CONCLUSION AND FUTURE SCOPE

In this paper, a comprehensive framework for leveraging blockchain technology to enhance online social networks, with a focus o integrating non-fungible tokens (NFTs) and reputation scores has been presented. Our work addresses the limitations of current online social networks by introducing novel features such as NFT marketplaces and reputations-based user interactions.

Through the implementation and testing of our proposed system, we have demonstrated its feasibility and effectiveness in providing a secure and transparent environment for social media interactions. The use of blockchain ensures data integrity and decentralization, mitigation concerns related to privacy and censorship.

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