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Decentralized Image Sharing and Copyright Protection using Blockchain

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Abstract
Social media has become an integral part of our lives as Platforms like Facebook, Twitter, Instagram are conceived as a means of direct consumer interaction. Here, the problem identified is that although, these mediums have been promising their consumers some major concerns like privacy and censorship resistance, the promise has not been kept. Keeping the profitability in mind, social media platforms are risking the privacy of consumers. Centralized nature of these mediums is the main reason behind these issues. So, the objective of the project is to build an application in a decentralized way so that consumers can communicate without censorship while protecting their privacy.

Keywords—Censorship, Privacy, Centralized, Interaction, Decentralized, Consumers

Literature Survey

[1] As per the research paper we have implemented the idea, when the blockchain paradigm was coupled with cryptographically-secured transactions it has been used in a number of projects, not least Bitcoin. Every such project is a simple application on a singleton, compute resource in a decentralized way. We have called this paradigm a transactional singleton machine with shared-state. We have deployed smart contacts in Ethereum which implements this paradigm in a generalised manner. We have also provided a plurality of such resources, is able to interact through a message-passing framework with others. We have discussed its design, implementation issues, the opportunities it provides and the future hurdles we envisage.

In this we are able to use a purely peer-to-peer version of electronic cash which would allow online payments to be sent directly from one party to another without going through a financial institution and long process it will save time as well. Digital signatures can provide some part of the solution; however the main advantages are not achieved if a trusted third party still needs to prevent double-spending. We have proposed a solution to the double-spending problem using a peer-to-peer network.

The network keeps a digital record of the time of occurrence of transactions by hashing them into an ongoing chain of m hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain serves as a proof of the sequence of events witnessed. Also, a proof that it came from the biggest pool of CPU power. As long as nodes control a majority of CPU power that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers.

Minimal structure is required for the network. Messages are broadcast , and nodes are able to leave and rejoin the network at will, while accepting the longest proof-of-work chain as proof of what happened while they were gone.

[2] In this paper, we propose an image copyright protection system based on the fusion of deep neuron network and blockchain to address the certification issue and identify edited region of the original image. Deep neuron network is to extract features of the original images, which are the stored in the blockchain with owner's information.
Blockchain is used as a secure database to store

important information to provide time and place of

existence of work. Interplanetary File System (IPFS) is used to store huge amount of image data to achieve decentralization which integrates with Blockchain very well.

[3] Further paper says**,** Blockchain technology with smart contracts is adding so much value to industry and businesses. A "smart contract" is simply a program that runs on the Ethereum blockchain. It's a collection of code (its functions) and data (its state) that resides at a specific address on the Ethereum blockchain. Smart contracts are lines of code which are self-executing which establishes the terms of an agreement between buyer and seller automatically verified and executed via a computer network. As a result, smart contracts reduce the administration and save services costs, brings efficiency, and lowers the risks. In spite of having challenges smart contracts are capable of standing firmly in the new wave of innovation. In this paper, a survey on smart contracts is presented. We first introduce blockchains and smart contracts. We then present the challenges in smart contracts as well as solutions to overcome them. We also criticize some platforms that are providing smart contracts and provide solutions with examples to guide with correct applications.

[4] With the continuous development of blockchain technology, Bitcoin as the first cryptocurrency has drawn massive attention from various sectors. According to the growth rate of Bitcoin transactions, it is estimated that the size of Bitcoin data on a full node will exceed 400GB within two years. The storage problem makes it difficult for common users to easily store all of Bitcoin data, which weakens the decentralization capability of Bitcoin network. In this work, we propose an efficient storage scheme (ESS) based on the the transaction inputs. Only a small amount of transaction outputs of older blocks needs to be retrieved from the full node for payment verification. Experimental results demonstrated that our scheme could reduce the size of a normal node in current Bitcoin system by about 85% at a low communication cost.

[5] In this paper, we proposed a video copyright detection scheme combining on-chain and off-chain based on blockchain technology for the problems of undisclosed digital copyright detection process leading to unreliable and unverifiable results. Initially, the feature fingerprints of the key frames are extracted from the video and then the smart contract is called to perform copyright detection on the blockchain automatically to ensure the originality of the copyrighted work and the verifiability of the detection result. Finally, the video feature value is permanently and immutably stored on the blockchain.

I. Introduction

In the current era of internet, exchange of data over social media has been a very popular way of interaction. While doing this consumer data gets prone to censorship and privacy leaks. To overcome these issues we are aiming to build a platform that can eliminate these issues and can bring transparency and security to the system.
The paper demonstrates how using a Blockchain network coupled with use of perceptual hashes and appropriate smart contract logic can provide better mechanism for copyright violation detection than current systems along with many benefits of Blockchain such as permanent record of trade, transparency, trust, immutability, high availability, information security and cost savings.

II. Problem Statement

- Social media has become an integral part of us are lives as Platforms like Facebook, Twitter, Instagram are conceived as a means of direct consumer interaction. Here, the problem identified is that although, these mediums have been promising their consumers some major concerns like privacy and censorship resistance, the promise has not been kept.
- Keeping The profitability in mind, social media platforms are risking the privacy of consumers. centralized nature of these mediums is the main reason behind these issues. So, the objective of the project is to build an application in a decentralized way so that consumers can communicate without censorship while protecting their privacy.

III. Objectives

- Built and deploy a decentralized application so that the content is immutable and transparent.
- Establish a public interaction medium which provides data privacy and censorship resistance.

- Creators should be able to get the tip from the users as a sense of appreciation.

IV. Proposed Work

- Interplanetary File System (IPFS)
  The Interplanetary File System (IPFS) is a hypermedia and file sharing network for storing and sharing data in a distributed file system. Content-addressing is used by IPFS to identify each file in a unique way in a global namespace while connecting IPFS hosts.

- Smart Contracts
  Smart contracts are self-executing contracts inside which the contents of the buyer-seller agreement are written directly into lines of codes. Using it makes the transactions traceable, transparent, and irreversible.

- Truffle framework, Ganache and Meta Mask are the dependencies that we are going to use in our application**.**

V. Hardware and Software Requirements

➢ Hardware Requirements –

- Processor (Intel Dual Core) : 2 GHz
- RAM : 4 GB
- Hard Disk : 256 GB (Min)

➢ Software Requirements-

- Operating System :Windows 7 Onwards
- Coding language : Solidity, JavaScript
- Text editor: Sublime Text

➢ Environmental Tools

- Node.Js

Node.js is a Backend JavaScript runtime environment that will allow us to install all the packages on the computer and run client-side applications.

- React.Js

The React.js a JavaScript framework and library. It is used to build interactive user interfaces and web applications quickly and efficiently.

- Truffle framework

It is a framework which is used to create Ethereum smart contracts, write contracts with solidity programming language write tests against them and deploy them to a blockchain with truffle.

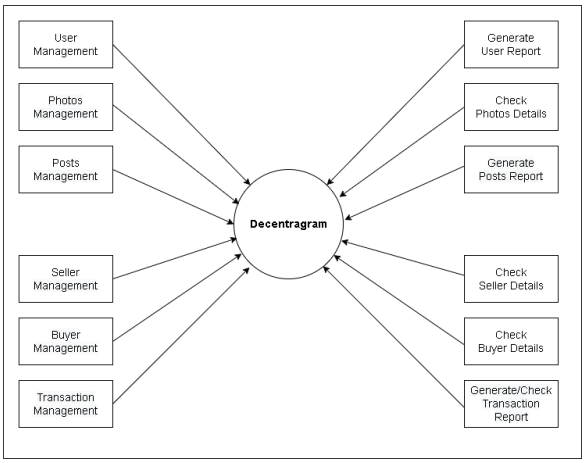
- Ganache

It is a personal blockchain that will run on our computer. we can download it and run transactions in the blockchain, deploy smart contracts without having to pay any real money.

- MetaMask

It is an extension for Google Chrome. Most modern web browsers will not connect to the blockchain out of the box. so, we need to install a special Browser extension to do that. That is exactly what Metamask does it is an Ethereum wallet that turns our Browser into a blockchain Browser.

VI. DATA FLOW DIAGRAM



VII. Conclusion

- We conclude that Blockchain based solution for online stock photo marketplace provides many benefits over traditional marketplaces such as high level of security, permanent record of trade, custom licenses, custom selling price for image, higher revenue for contributors and permits distributed storage of images with the help of IPFS.
- Due to the absence of central authority, the marketplace is free from censorship and interference. After thorough evaluation, we conclude that the perceptual hashes are effective and efficient copyright infringement detection tools. The Blockchain transactions

only contain IPFS hashes for retrieving images. By encrypting content beforehand in the smart contract with a choice of an encryption scheme and then transferring data to IPFS, information security is enforced.

- The smart contract releases decryption keys only to appropriate buyer. Furthermore, our implementation is scalable. Thus, the paper illustrates a novel use-case of a proven technology to help fight a deep-rooted malicious practice in the stock-photo world.

VIII. FUTURE SCOPE

In this era, the most feasible and transparent way to overcome these issues is decentralization of these mediums. Blockchain technology is positioned in a way that it can deal with both these issues. By decentralizing corporate social media, Blockchain technology will remove the hub responsible for censorship and privacy leaks.
Social media on a decentralized peer-to-peer ledger would allow its users to interact directly with each other. As the information is on the Blockchain, it would be completely safe and secure Further, moving social media onto the blockchain would allow for decentralization, creating a censorship-free platforms where users could express themselves without corporate governance. Such a system would be potent to bring values what social media set out to be.
Privacy and Censorship have been major concerns for social media users. As privacy Being the most important factor as it gives us control over our identity and personal information. Users should be able to decide who they want to share their information with. But various issues like data mining, hacking, false information, storing, re-purposing, provision and displaying of information have become threats to data privacy. Also, Social media platforms are becoming increasingly censored, both internally and through government regulation. Censorship can control what information can be put on the internet or not. It can limit not only the accessibility of information but also the freedom of expression.

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