



By



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PiratesCatcher

A Blockchain based platform to stop movie piracy.

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Abstract

Piracy is affecting the film industry globally and is spreading like wildfire. The estimated yearly revenue loss globally is to the tune of US\$ 5-6 billion. The movie making process has various phases starting from ideation to post production and distribution. This requires a lot of effort and many people have worked very hard behind the scenes.

When some dishonest person or untrustworthy leaks the original copy to people, it's a great loss to filmmakers and a huge disrespect to the efforts of many people involved in the film.

PiratesCatcher is a blockchain based platform to stop movie piracy. It uses various digital watermarking and encryption technologies to cater to this problem. Although it may not be foolproof safe but it is surely an approach how blockchain and decentralised storage can help us solve this problem.

Introduction

As said earlier, piracy is a big loss to filmmakers and as many people are involved in the production of particular movies so their years of hard work gets wasted if that movie copy is pirated or stolen or leaked.

To tackle this problem I have tried to introduce a platform PiratesCatcher which can catch the pirate to some extent. PiratesCatcher is a blockchain and Ethereum based platform to stop movie piracy.

It is a platform where filmmakers can keep a track of all the events starting from movie registration, shooting, editing final copy and then distribution of copies. It also uses digital watermarking and encryption technologies to detect pirated copy and also the pirate.

Also, even if a copy gets leaked via screen recording then also we can easily see the watermarked address of the cinema house i.e. the pirate who leaked this copy and we can penalize it for this.

The person who reported this leaked or pirated copy will get some kind of bounty for this deed.

If the cinema house continues doing this, we can ban this cinema house.

Problem Statement

Existing System

In the current situation, the film copies are distributed to cinema halls as digital files in two ways-

1. Send a hard disk drive to the theatre with the movie and all of the trailers that the studio wants to have shown before the movie.
2. To download the movie from a communications satellite or to get it through a high speed internet connection. To do this the theatre needs a satellite reception dish and a library server where the movie is received and stored.

In both the methods, the movie is encrypted with a strong encryption system. A digital key is sent to the theatre for each server that will run that movie, allowing the movie to be shown in that particular auditorium.

Limitations of Existing System

1. When any cinema is telecasting, any person can screen record the whole movie via its mobile.
2. Even the person can attach any hidden camera somewhere near his body and start recording the whole movie.
3. We can't track easily who was the culprit behind this recording.
4. Along with screen recording the other flaw is copy getting leaked from the source itself.
5. If any enemy of the content creator leaks a copy then also we can't track who did it as we don't have control or track information of the copy.

Proposed System

1. The system which we can use is PiratesCatcher which uses Blockchain technology.
2. It is a platform where filmmakers can keep a track of all the events starting from movie registration, shooting, editing final copy and then distribution of copies.
3. It also uses digital watermarking and encryption technologies to detect pirated copy and also the pirate.

Advantages

1. We can easily catch the pirate because of digital watermarking.
2. Also, we can track at which point of time the movie was leaked, if it was.

System Design

1. Create a blockchain based platform for filmmakers where they can keep a track of all the events starting from movie registration, shooting, editing final copy and then distribution of copies.
2. After the final copy is made, it's compulsory to upload to our platform i.e. decentralised storage.
3. So, every person's copy be it director, producer etc. will be unique and watermarked and signed with their address.
4. So, every director, producer, reviewer will have their unique wallet address which will be watermarked when they see movies.
5. Now, when the entities of filmmakers get their own copy, an event will be triggered to keep a track of what is happening and store it onto blockchain network for future proof.
6. Now, copies can be distributed to all registered and authentic cinema halls owners with proper watermarking of their wallet addresses.
7. Now, whenever any cinema telecasts that show, an event is captured.
8. Any type of screen recording of that copy will contain the address on copy due to watermarking.
9. We can add a bounty system for reporting the pirated copy which will contain an address to function the project effectively.

Requirements

1. Ethereum Blockchain - Platform for Dapps.
2. Rinkeby Testnet - Place where contracts get deployed
3. Sia File Storage/IPFS File Storage - Decentralised Storages.
4. Remix IDE - IDE for compiling smart contracts.
5. Ganache - Testing smart contracts.
6. Truffle - Deploying smart contracts locally.
7. React.js - Javascript Front-end framework
8. Metamask - Wallet with addresses and their Ether balances.
9. Web3.js - Library to connect frontend with smart contracts.
10. Infura - Acts as a node.
11. VS Code IDE - IDE to code and debug problems.

Implementation

Phase-1

1. Create a smart contract in Solidity in Remix IDE.(8/12 - 15/12)
2. Testing and Deployment of smart contract using Truffle and Ganache.(8/12 - 17/12)
3. Create front end for the PiratesCatcher platform.(17/12 - 24/12)
4. Create Director's Dashboard (20/12 - 27/12)
5. Create Movie Registration Form (25/12 - 30/12)

Phase-2

6. Create a progress form for events and different phases like ideation,casting,shooting,final editing and distribution.(1/1 - 7/1)
7. Create a video player type platform for cinema houses to telecast movies.(7/1- 10/1)
8. Create a bounty platform for pirated copy reporters.(11/1 - 12/1)
9. Configure decentralised storages in the platform. (13/1 - 14/1)
10. Deploy final contract to Testnet.(14/1 - 15/1)
11. Final Integration of frontend and backend. (15/1 - 22/1)
12. Final Testing of complete application and fix bugs if present (23/1 - 28/1)

Testing

1. Get a movie file which we can upload to our platform.
2. Let director login with his credentials.
3. Register a movie on the platform by the director.
4. Make some events about ideation, casting, shooting, editing copies.
5. Upload movie file onto decentralised storage and its hash encrypted and stored onto smart contract via platform.
6. Write the addresses of producers, reviewers and cinema houses who are allowed to access movie from decentralised storages.
7. Check in video player whether legitimate entities can access and see the movie.
8. Check whether their addresses are watermarked on movie player.
9. Try to screen record the video from cinema portal.
10. Upload the screen recorded file on reporters platform.
11. Try to find pirate cinema through this.
12. Give bounty to reporter.

Conclusion

PiratesCatcher is a blockchain and Ethereum based platform where we can track movie events and all phases that happen in complete movie production so that even if the copy or idea gets leaked in between these phases we can easily track using blockchain ledger events.

We also provide a video player platform for cinemas or entities where they can see movies with their address watermarked on it to prevent screen recording and leaking of copy.

With the help of this platform , we can atleast minimize piracy which can save a lot of money of content creators.

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