Digital Artwork Trading System

Proposal

Member: Jing Jiang EE 20', Zheng Liu EE 20'

Background:

The industry of digital arts has developed greatly in the past decade as art production softwares and personal electronic devices became more and more accessible to everyone. The digital format of the artworks has many underlying meanings such as easy-to-transfer and duplicable. However, an artist, if he or she wants to protect the intellectual property of the work seriously, has to go through a registration process with the Office of Copyright, which is now online by still time consuming. On the other hand, internet also has its own looser rules, which usually can be found in 'terms of use', to regulate the use of others' words, code, pictures, music, etc. Although there are different licences, the general standard is that if a permission is not granted, people can not use other's intellectual property either personally or commercially. For example, instagram is a big name in social medias. It is now used not only for sharing people's life, but also for social media marketing. There are many accounts steal others' personal posts and repost in order to attract more followers and promote their product. In practice, if a person saves a post on instagram and use it as his or her wallpaper, it will be no harm. The real problem is the commercial uses as described in the example. A copyright infringement is often not admitted because it is hard to prove the ownership and a lack of permission. Copyright thieves usually argue that the artworks are originated by themselves or they have got permission from the creator to use them, even with forged paperwork.

A big part of the reason of this situation is the lack of a system of trading. Our platform will fill the blank. The importance of the platform is firstly that it builds up the market and awareness of copyright. Blockchain provides trust for the participants as it keeps all the transactions in a distributed ledger. Speaking of laws, the platform does not replace the current registration system of copyrights but cooperate with it. The platform can keep a clear history of tradings related to an artwork to help tell what is legal and what is not. It will be a good start of the simplification of protecting copyright and a practical approach of digital artwork trading.

Brief introduction to our solution:

As said earlier, trading copyright with blockchain does not automatically give as strong protect as by law but it will has its social effect. If an artist manages the copyright of his artworks by blockchain, it will be clear that he owns it and to whom he gives permission to use.

Our project will be built on Ethereum using its language solidity. Ethereum provides us with a platform to build our smart contracts and ether and tokens as currency and goods.

Copyright is the good in our project and their are various ways of trading it with different smart contracts. The users can buy copyright, rent copyright, and subscribe to the artist. Buy a copyright means that the buyer will have complete ownership and can treat the work however he wants. Rent a copyright means that the copyright can be used for a certain amount of time. Subscribe means that for a certain amount of time, all the artworks of an artist can be used. All of these types of deals are initiated by the owner in the form of auction. All types of deals support negotiation of price, which is tentatively designed to be realized as a transaction.

As all the information about an artwork is saved into blockchain since its birth, it can prevent improper uses of it including using it without permission, fraudulent claim of ownership, and illegal redistribution.

Because the project is tightly related to the real offline world, the network will be made permissioned. Ethereum is account based, which makes management very easy. To create an account, an artist has to have at least one existing artwork. A dealer (buyer) has to provide the information of his websites, social media accounts, and other potential publication places and show a proof of ownership of those by posting some specific messages. Violation of rules will affect the use of the account.

Related work:

There is no existing blockchain serves the same purpose of our project. One of the most successful projects that are similar and related to ours is CryptoKitties. CryptoKitties lives in Ethereum. Artists can create designs of kittens with different colors, decorations, gestures, etc. Each design will only have a small number of copies. Because of that, digital artworks on CryptoKitties has scarcity like physical arts. The purpose of CryptoKitties is very different from our project. It gives value to digital artworks by scarcity, which makes it more like a financial game because there is truly no scarcity in the digital world as everything could be duplicated without damage. The source code of CryptoKitties is in the public domain and can be studied to benefit our design.

The project named Quorum will be studied as instructions to create a permissioned blockchain on Ethereum.

Roles:

Jing Jiang is responsible for project planning and management of the project. Zheng Liu is responsible for website creation and maintenance and formation of design problems by researching the technical and social aspects of the project. In later stages of the project, Jing will be in charge of construction and Zheng will be in charge of test and evaluation. For actual implementations, specifically, Jing will focus on transactions initialized by sellers (artists) , including creation of artwork, set initial price, copyright open for rent, copyright open for sale, open for subscription, etc. Zheng will be focus on the buyer side and systematic processes, including bid, resell, start auction, close auction, cancel auction, etc.

Evaluation:

We will evaluate our application from several aspects. First, we want to address the question of whether we solved our initial problem. Second, we want to find out how well it may work. This “wellness” comes from the results of numerous testing processes that we will perform to our project. Third, we want to compare our application prototype to some state of the art that already exists to see what are the advantages and disadvantages of our project.

Demonstration:

In terms of the final demonstration, we plan to demonstrate all the functions of our application prototypes. Specifically, we will create different types of accounts (artist and dealer) and perform each type of manipulations related with the digital artwork trading system, such as submitting an artwork, selling the copyrights to buyers, etc. We will also include potential

deliverables such as screenshots showing the results, or youtube links introducing and testing the application prototype.

Maintenance:

In terms of maintenance of our project. We decide to make a website for our final project. We will submit an summary of our project and update it every time we make some progress. Also, we will manage our code on github. The url of the github repository is https://github.com/jassiay/BlockchainClassFinalProject. This github is Jing Jiang's personal account.

Low Hanging Fruits & Challenges:

One of the low hanging fruit is the trading part. Because the trading of the artworks can be seen as transactions, this part will be slightly easier to realize by code and frameworks. One of the biggest challenges is the price negotiation system. Because there's a latency involved in blockchain, but price negotiation sometimes requires instant communication. We concern that Ethereum may have built-in inferiors in this aspect.

Reference:

https://eco.copyright.gov	Office of Copyright
https://www.cryptokitties.co/	Official website of CyptoKitties
https://ethfiddle.com/09YbyJRfiI	Source code of CryptoKitties
https://help.instagram.com/478745558852511	Instagram: Term of use
https://github.com/jpmorganchase/quorum	Quorum source code

Schedule:

Get familiar with Ethereum framework and coding								
Analyzing the project and divide it into sub-tasks								
Building the project/Coding								
Test and debugging								
Update the project process on the website and github								
Finalizing documentation and deliverables								
4/9	4/12	4/16	4/19	4/23	4/26	4/30	5/3	5/7