

[Blockchain] Accuracy Certification System for a Kpop Dance Application

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Abstract:- These days, with the popularity of music, video, performance arts and creative contents among the younger generations, a raise on the number of people who want to start a self-made online career on the above industries could be seen. Among them there are those who are becoming a self-made artist, dancers, coaches. Not having a certified institution to verify the authenticity their skills, eventually, an online automatized method of self-certification, recognized by but not necessarily made by institutions, will be essential, due to the boom of creator professionalization, their large influence and the health and safety risks implied. There is still lots of improvements to be done in this field. This paper explores the blockchain certification system and its opportunity to be applied as skill classification and selective stage on the dance audition system. The findings here will be applied on a dance and fitness application.

Keywords:- Accuracy certification for body movements – Blockchain – Dance – K-pop – Online Sports – South Korea.

I. INTRODUCTION

Born in an internet granted digital reality and surrounded by a wide range of content stream, when asked about the musical genre they identify themselves with, generation Z showed some trouble finding a common answer, unlike its older generations. However, some sources indicate there is another musically related trait that cannot be ignored on this following generation: Dance.

The popularity of dance in social media has already broke the old system opening new entries on the professional field, even in very young ages.

However, the system is still not ready to shift from music, music recognition and certification to dance. There is still a lot of gray area in trying to define the copyright for a choreography and to qualify dancing skills and body expressions.

This project is willing to explore the opportunity and create a credible, recognized and safe environment for professional developments in the online dance and fitness industries.

II. BARRIERS, ASSUMPTIONS AND IMPLICATIONS

A lot of the gray area in copyrighting dance moves is related with qualifying what exactly a choreography is, as bodies have limited motions (as a human and even individually). It is not that linear that somebody's movement needs to be 100% accurate to be considered skilled. Also, like many other intellectual properties there is the expressivity and other creative aspects you can add to a choreography (ex. Covers). An attempted tolerance on that is included on the measurement and the certification can so far follow the current measurement data.

With the integrated log system from Blockchain we can only certify based on user performance history and its data can only reflect accuracy with a standard pattern, yet. (see posture estimation paper). Future improvements are to be made in order to include technique and expressivity, without giving up on grading.

III. BLOCKCHAIN AND HYPERLEDGER FABRIC

Mainly known for its cryptocurrency, blockchain started as an attempt to raise the trust and confidence on data in the midst of the financial crisis, without requiring an external authority to ensure, by creating a transparent environment where information stays recorded permanently on a log of transactions that can be peer reviewed and verified.

The blockchain environment is similar to a network. Each member of the network would be called a node, which is also known as the user or a member of the blockchain itself. Some of the nodes, who have permission to verify the blocks are called the miners. Then nodes can do transactions, which is the smallest unit of the system. The transactions are stored in blocks, a bigger unit, and then distributed by all the nodes. And a sequence of blocks makes a chain. Some arrangements can be made for the network, these are called a consensus.

Blockchains can be classified into three types: public, private or consortium. The first one is simply a public ledger, where everyone holds permission and the trust on the system is held by the transparency itself without a verifying third party. The first condition allows the public blockchain nodes to be anonymous (as everyone has the same permissions under the consensus) which creates a decentralized secure environment. The private blockchain

is a limited access environment which mean fewer and identified nodes. Works well for data protection. Consensus are easier to make and to enforce, creating a more efficient environment. Lastly the consortium blockchain is a mixture of the previous two, where the blockchain is controlled or directed by predefined nodes. It is partially decentralized, not completely anonymous not completely identified. Its objective is to hold some transparency from the public blockchain as well as the efficiency and controlled consensus from the private blockchain. There are different types of consortia. We are using the Hyperledger consortium from the Linux Foundation.

The whole blockchain system was dubious for about a decade, but very promising. And now, after probations with the support of investments and the creativity of developers, experts say that is “no longer a matter of it working or not”, but rather question where to apply it and the most efficient way to do it.

For this project we are working with Hyperledger consortium, namely with the Hyperledger Fabric.

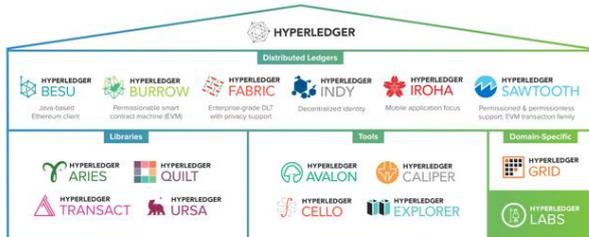


Fig 1

Hyperledger Fabric is a private blockchain creator within a consortium blockchain. It can be used by enterprises to blockchain the transactions of their businesses. With Hyperledger Fabric, enterprises can define the assets being transacted, the types of transactions themselves and how they modify the asset status, the nodes included and its permissions. The definitions are settled through a chaincode, that can be modified by the enterprise or permissioned nodes.

Fabric nodes are also classified into peer nodes (Peers) and ordering nodes (Orderers). Peers basically perform transactions, but also have the Blockchain verifying role. Orderers take those transactions (or transaction proposals) and organize them into blocks.

Fabric is comprised into two components: A blockchain log of the transactions occurred and a state data that indicates where in the blockchain is the current state of the asset.

Hyperledger Fabric assures that, instead of undergoing individual small contracts per case, transactions go through an efficient systematic process, with defined conditions shared within the whole blockchain network without compromising the privacy of critical transactions (being the blockchain, in this case, the flow of the asset through the planning, production and distribution until the final consumer).

IV. THE CERTIFICATION SYSTEM FOR ONLINE DANCES AND FITNESS

In order to create the certification system, we were looking for this project, we needed it to be recognized transparently by peers so that we wouldn't need the verification authority that is already not being present on the self-made career path. So blockchain was a fit. The Hyperledger Fabric framework is convenient framework for smart contracts, as it includes a range of tools such as Hyperledger Composer, can be programmed in common programming languages such as java and moreover, all the assets, transactions, peers and authorizations can be very simply defined, creating a very stable systematic process.

Requirements for the project include the web service, Fabric framework, library of standard movements and the integration with a comparison platform. For the platform itself, we are applying it to the ChoomChoom / Sparky platforms, who use AI machine learning to compare real-time movements accuracy.

The flow we were expecting was as follows:

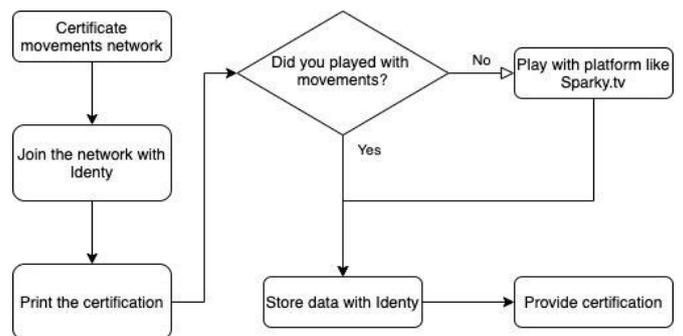


Fig 2

A Blockchain for certification would be created. By creating a log in on the application, the user would be added to the blockchain as a peer. A certification of identity would be logged. By following the instructions to a standard choreography or fitness movement, the user's skills, namely accuracy, would be graded. That graded could be issued into a view, share or printing transaction.

The model file for the project is defined as:

Namespace	ChoomChoom/ Sparky
Participants (peers)	Signed In users
Assets	A peer's combination of movements in a given time.
Transactions	To see the certification. To print the certification. To share the certification.
Events	Certified user

Table 1

Some other definitions for the Blockchain are:



Fig 3

Its common consensus that peers must join the service with web and that they should be logged in with registered information.

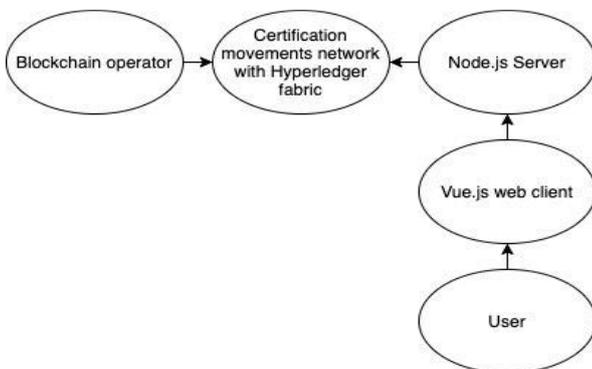


Fig 4

V. RESULTS AND DISCUSSIONS

When applied to the app, we settled the environment, and as the user plays and receives scores the user data issued was prepared to be stored in the blockchain.

This data could be transacted through share, print or viewer. However, there are some functionalities yet to be added to the platform for the transaction to work smoothly.

There are some improvements to be made but we are looking forward to testing this system in a larger environment (Launching).

Other applications for this system is as a fair evaluation system in survival shows or auditions. This blockchain can attenuate controversies from ambiguous evaluation which risk the image of the artist and its company and also allow entertainments to have a wider range of audition (by online score).

This system can be also applied to solve copyright issues with dances and movements as it can also provide certificates for choreography creation in platform, serving as a foundation for claims.

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