Research Proposal

By: Ryan Lafferty

Proposed Idea: Talent Chain Using Blockchain for Decentralized, Secure Transfer of Credentials

Background and Scope:

The hiring and employee verification process depends significantly on applicants providing honest interpretations of their skills, experience and education. Being able to verify these metrics in an immutable, secure and transferable environment would provider significant advantages for employers and applicants in any industry. “The typical transfer of a student's transcript from their home institution to another can take a few days to over a month with processing and delivery times using the widely adopted paper method.” (Badr et al, 2019).

Knowledge Media Institute (KMI) of the Open University UK (OU) with the initiation of the use of badges, certificates and web reputation using blockchain as a trusted ledger.(Saleh et al, 2020) However this study focuses mainly on the application layer using a decentralized application. The same direction is taken in by Gaikwad et al (2) studies of a blockchain verification system. In fact this proposal uses deep learning algorithms such as Long Short-Term Memory to extract credential and verifications from existing certificates. It then creates a hash function based on those credentials which will be unique to the individual user.

Malsa et al(3) provide a proficient system verify credentials of institution and applicants where a service manager is used as a “middle-man” between the institute, employee, employer, and blockchain. The purposed research will follow the same methodology, however the goal will be to combine the blockchain and service manager using a Decentralized Autonomous Organization (DAO).

Research direction

By conducting this research project, the current system can be replaced by one that is durable, secure, decentralized, and timely. By making acedemic verification easily accessible many sectors would benefit including human resources, continuing education and even immigration sectors can be thorough and accurate in a more efficient process.

The primary focus will be implementing a DAO into the talent chain, a referenceable public ledger with academically verifiable credentials. The DAO would be created using randomization with Proof of Participation framework similar to what is proposed in Nandwani et al (5). Proof of Stake would be required for entry. By staking a relatively large sum the DAO member could be punished for supplying the wrong documents. The DAO members would be referenced by smart contracts in the blockchain. The smart contracts would enable voting functionality that can be carried out by a Proof of Work system. This method assumes a transaction fee would be required for providing and updating the blockchain. A larger reward would be provided to the winner of the Proof of Work and everyone that contributed to the Proof of Stake would receive a smaller reward.

The implementation requires the use of decentralized identifiers (DID) in the form of DAO tokens to verify the identities and supply access control to the blockchain. Private keys and digital signatures are required to administer credentials for employees and institutions.

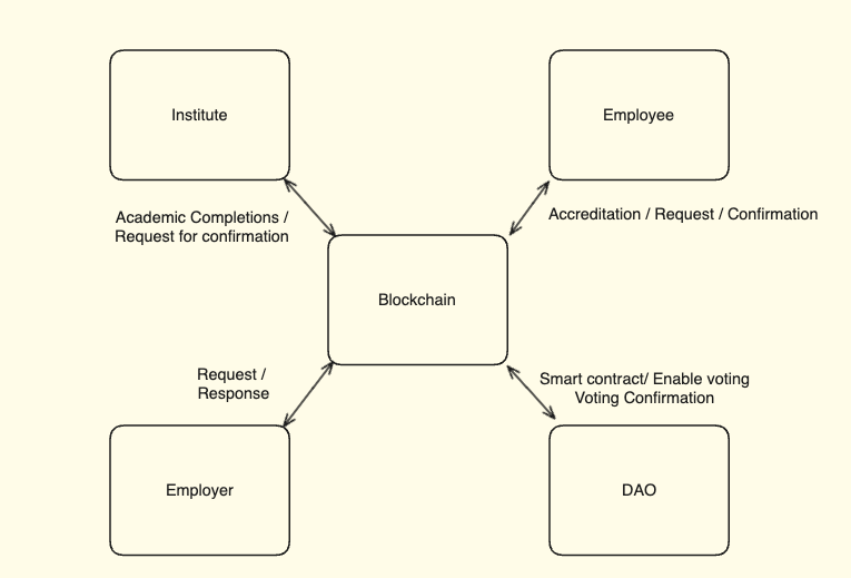

Fig 1. Structure

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