

Survey on SkillVio: Skill Verification System Using Blockchain

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Abstract – One of the biggest issues with hiring new employees is skill verification. Since the certificates of the abilities claimed by a candidate are typically not immediately verifiable and costly to evaluate, companies and academia sometimes struggle to determine the skills of an applicant. Blockchains have been suggested in the literature for decentralised talent verification and tamper-proof data storage. However, the majority of these strategies focus on using the blockchain to store certifications granted by conventional colleges. Questions like (a) scalability with limited staff, (b) homogeneity of marks throughout numerous evaluators, or (c) honest effort extraction from the evaluators are typically not addressed among the few techniques that take the certification system itself into consideration. We suggest a blockchain-based platform called SkillVio that takes the aforementioned questions into account. and ensure several desirable properties. The network rewards grading labour by rewarding people with tokens it produces from payments made by platform users, such as employers and test takers.

Key Words: Verification, Homogeneity, Recruiters, Scalability, Certifications.

1. INTRODUCTION

A blockchain-based system for skill verification can help shorten the time needed to carry out competency checks and skill verification while also fostering greater confidence in the organization's competency and skill management. With blockchain, a worker can have their abilities documented on a network that is accessible and that is also vetted and approved by their prior managers or employers. As a result, we may have total confidence in an employee's abilities, experience, learning objective progress, and degree of competency thanks to a skill chain built on the blockchain. We can also see transparently who has endorsed the employee's skills. Additionally, this will enable the firm to most utilise respectable staff for individual business demands.

On the other hand, the massive open online courses (MOOC), which are driving the rapid expansion of online education, have experienced unparalleled growth. It required several of the characteristics common to blockchains in order to thrive,

most notably I the lack of a central authority and (ii) verifiable certifications. Today's skill certification requirements call for need-based abilities to be certified, which might be challenging to acquire in a typical university system. For example, a course on developing Android apps may not find The IIT Kanpur fund number cs/2017198 is funding this effort. a spot in a university's curriculum, whereas a student proficient in that field could be essential to some firms. However, the company must either engage the student without a certification or pay for the student to take a costly independent skill exam. The necessity for blockchains in education has evolved in order to close this gap and provide skill certification on demand. This need is also highlighted in the European Commission's policy report, which acknowledges that blockchain applications in education are still in their infancy and urges the EU to work with Member States to consider developing and promoting a label for "open" educational records that upholds the principles of recipient ownership, vendor independence, and decentralised verification in order to ensure the development of open blockchain implementations. The management of certifications issued by standard agencies dominates the literature on the use of blockchains in education. According to a survey by Alammary et al, this topic was covered in nearly 41% of the papers that were thoroughly surveyed. However, finding the appropriate instructor and evaluators who can certify candidates' skills is a significant barrier to skill certification. This is a difficult endeavour because there hasn't been much research done in this area on the effectiveness of assessors or the calibre of certificates. In this study, we explore what guarantees may be made regarding the quality of certifications using an incentive-based approach for the various actors in the education blockchain network.

1.1 Literature Review

[1] Decentralization of Credential Verification System using Blockchain

After successfully completing their studies, students receive their course credits in the form of a certificate from the appropriate university. When applying for a job or further education, a student must present their documentation to the

hiring manager or the appropriate authorities. Since the system is now centralised, all of the data is stored on a server that is vulnerable to hacking and can lose data if the system collapses. However, confirming a certificate by authorities is a time-consuming process because human resources are involved in authenticating the candidate's information from their university. Today, due to technological advancements and the widespread availability of effective software, credentials and certificates are frequently faked. The absence of anti-tampering safeguards led to cases where fake diplomas were frequently discovered. Additionally, seeking for duplicate certificates and having them issued by the university takes a lot of time if certificates are misplaced. Because all nodes in the network share the full chain and the blocks are cryptographically related, using blockchain technology in this process will decentralise the system. As a result, the suggested decentralised system employs blockchain technology and incorporates all necessary components for creating a DAPP. This approach is suggested as a solution to the problem of certificate forgery and to enable quicker certificate verification and issuing. Considering every concern, the system tries to solve them and improve the present certificate issuance, verification, and validation process.

[2] Revolutionizing Verification and Management of Educational Certificates with Self-Sovereign Student Identities using Blockchain

Even though educational institutions have made great strides in changing education systems, they still need a stronger, fraud-proof method to handle the problems that still exist today. To avoid re-verification and maintain an immutable record of a student's digital assets, all educational stakeholders, including e-learning platforms, academic institutions, universities, and students, need a single secure platform. This need is the driving force behind a significant transformation of the current system. The main goal of the work is to draw attention to the problems with fake degrees, duplication in document verification processes, lack of authentication for certificates in the current education sector, and lack of a single authorized identity for students and find solutions using decentralization, immutability, traceability, consensus mechanism, and other blockchain features. The distributed nature that blockchain offers eliminates the need for third parties between universities, institutions, and students. The used consensus process will ensure that only authorised data is uploaded to the chain, eliminating the fraudulent certificates that frequently wind up accumulating on the employer's desk. The goal is to create a prototype to see if blockchain technology can be used to address the challenges mentioned above.

[3] Blockchain-based Framework for Online Entrance Examination and Score Card Verification System

Universities choose potential students for admission by using entrance exams. The majority of entrance tests are administered offline using pen and paper, and a large number of candidates show up. The current entrance examination system, which uses centralised servers, is vulnerable to single points of failure and faces threats from question paper leaks, student plagiarism during exams, impersonation, answer manipulation, score card forgery, difficulty in university verification of score card reliability, and other issues. This study proposes a framework based on private blockchain to address these problems, conduct entrance tests online securely, and simplify the process of score card verification.

[4] Online Test and management System using blockchain Network

The existing online test service simply prioritized convenience and did not provide a way to guarantee reliability. Additionally, current online test services, which use centralized server administration and storage techniques, won't be able to keep up with such systems in the event of physical or SoF (Single-point of Failure) issues. The CPABE (Ciphertext-Policy Attribute-Depending Encryption, which creates a "Access tree" based on the user attribute to encrypt the information) technique is used to develop an online test and management system in this study. Each node in the system has a distinct level of authority, and the private blockchain network is built with nodes representing the system manager, examiners, and examinees.

[5] Proposing a reliable method of securing and verifying the credentials of graduates through blockchain

In some ways, education serves as the soul of the whole society development. Sincere degree candidates will benefit society with their knowledge and abilities. However, the issue of fraudulent certifications is scary and concerning on the flip side of the coin. It has been common in a variety of formats, from paper-based dummy certificates to replicas supported by database tampering, and its prevalence has skyrocketed in the current digital era. In this context, a blockchain-based overlay system is suggested to keep legitimate certificates in digital form and quickly check them whenever necessary. The suggested approach ensures that certifications can be found online in an unchangeable form for future reference after they have been verified and gives the current certification system a tamper-proof cover. A blockchain-based credential security and verification system prototype is created in the Ethereum test network to demonstrate the veracity of the suggested approach. It is a secure and workable solution to the online credential management system, according to the implementation and test results.

2. PROPOSED SYSTEM

Step 1: If you're a new user, sign up for SkillVio; otherwise, use existing user credentials.

Step 2: By invoking a public function to make a new copy of a Smart Contract, the examiner submits an exam on the blockchain network. The cost of posting an examination on the blockchain is a set quantity of tokens. After that, the Smart Contract locks the payment token associated with the submission. Users' wallets connected to the blockchain network contain a portfolio that stores their skill and assessment scores as well as tokens that they can acquire by reviewing papers or making purchases through the system. When the exam's question paper is available on the blockchain network, qualified candidates can register for the exam by contacting the SC's public function.

Step 2: Using their public keys, candidates and evaluators register themselves in SkillVio.

Step 3: To avoid identity theft, the test will be given in a testing facility. The responses must be submitted by the candidates by contacting the SC's private function. All candidate pooled responses will be included in the SC.

Step 4: The examiner reads through a set number of the response scripts on the probe sheets. As the instructor grades the probe papers, the scores are taken as benchmarks. The SC has put in place a distribution method that gives groups of papers to each evaluator. There is a balanced distribution of publications from anonymous probe and non-probe evaluations. The evaluators review the papers that have been sent to them and then offer their evaluations of those articles. The evaluators will pay a little gas fee for this evaluation transaction. This cost is fixed and is subsequently covered by the platform. The evaluators must use the SC function and send the con with the evaluated marks. The skill scores of the exam applicants are calculated by our system. The candidates are informed of their scores.

Step 5: If the candidates believe the scores are unfair, they may request a regrading. The instructor then reviews the paper to determine the "real" grade.

Step 6: The final skill scores of the applicants and the evaluation scores of the evaluators are updated in the Smart Contract based on the instructor's assessments of the papers that underwent the regrading process and the papers for which there were no regrading requests.

Step 7: The smart contract transfers the collected tokens to the evaluators after computing an appropriate distribution of the tokens from the evaluators and examiner.

Step 8: The viewers, such as recruiters, can access the users' skill and evaluation scores by purchasing tokens. We've

demonstrated how SkillVio satisfies a number of desirable characteristics.

Step 9: The candidate will be shortlisted for further consideration if the recruiter is happy with his abilities and test results.

Step 10: After Selection the process of recruiting will be ending.

Advantages:

Thanks to independent verification processes that occur across all participant computers on a blockchain network, blockchain delivers a high level of security. This verification is utilized in scenarios involving digital currencies to approve transaction blocks prior to their inclusion in the chain.

1. Evaluation is made simple

2. Less work is required because of crowdsourcing

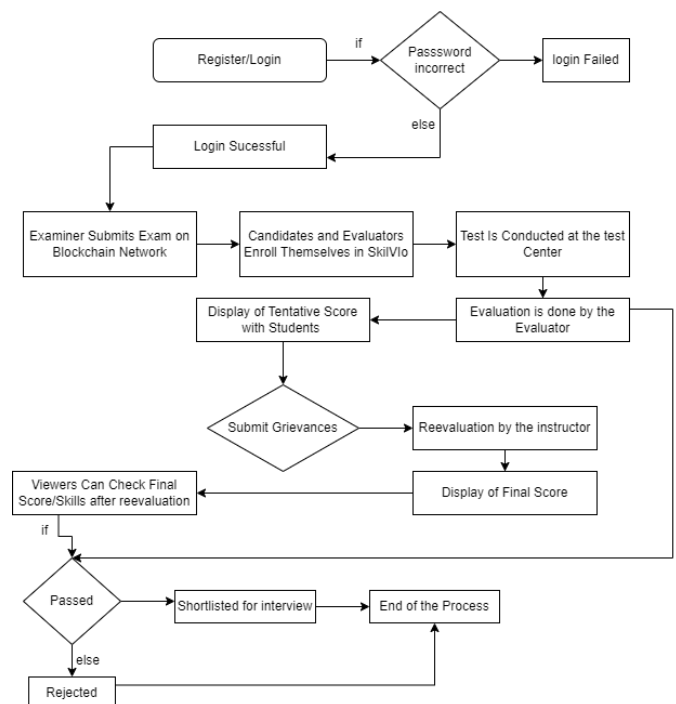


Chart -1: Flowchart

3. CONCLUSIONS

This paper proposes a framework for conducting Skill Tests online and verifying the score card using Blockchain technology. The framework proposed is highly decentralised, transparent, and dependable.

Because blockchain records cannot be changed or deleted, the proposed framework addresses issues common in

centralized exam systems such as paper leaks, copying, forging of exam results, and forging of certificates. Our long-term goal is to test and evaluate the proposed framework in a real-world setting.

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