

# Employee Background Verification on Blockchain

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## ABSTRACT

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In any hiring process, verifying the accuracy of the information provided by the recruiter is the first step in establishing compliance with the company and the employee. For the same reason, miles are too sensitive to make a complete history check for each hired student, without exemption. The study record reveals that employers around the world face a huge loss annually due to misrepresentation of confidential information by hired applicants. Particularly in India, it has been reported that one in six applicants misrepresents themselves. Such alarming data has accelerated the search and visibility of historical experiments in recent years. With the global transformation of the job market, it is very difficult to get a job in a company. People use their curriculum vitae with incorrect details to find the process. International organizations are investing closely to verify the historical facts of job applicants. However, the background verification process completed by those organizations is expensive, time-consuming, and inefficient. To address this issue, we have introduced a powerful response to the use of Design Science Research Methodology where the hash values of all application files offered by multiple companies are stored within the consortium blockchain. Details of the applicant's process can be established at a specific time in the hiring process by checking the hash file value given the document hash value that will be available within the blockchain. This method can be efficient, time-consuming, and cost-effective to include all types of companies.

Keywords : Applicants, Hiring, Job, Hash, Organizations, Employers, Misrepresentation, Applicant.

## I. INTRODUCTION

Employee Background checks are a vital side of the recruitment method to ensure company integrity.

Currently, background verification corporations use a manual-heavy approach that averages a time interval of 2-3 weeks for each candidate. a lot of usually than not, pre-employment screening usually takes longer

than the rest of the recruitment method. So far, there has been no workaround for this method with background check corporations as viva-voce has been the foremost reliable methodology. that's heretofore! Before we answer this question, it's necessary to deal with the digital transformation brewing within the 60 minutes field. Digital 60 minutes and other people analytics are the focus within the sector over the previous couple of years.

Adoption of technology has accelerated by seven years, in keeping with a report by McKinsey. These changes are a testament to the very fact that 60 minutes is undergoing revolutionary changes, and experimenting with new technology is way easier nowadays than a decade ago. Speaking specifically of digitisation within the recruitment method, BGV (Background Verification) corporations are presently using ATS (Application tracking Systems) to quickly sift through boards of applications, victimization, easy word-mapping and large data. As of now, the mesh that the ATS filter uses is kind of hoarse, which means the system helps eradicate unsuitable candidates based on qualifications mentioned within the resume. However, ATS technologies will simply double-down with an ultra-fine mesh of verification right at the start of the applying method using Blockchain. oral communication therefore isn't simply a conjecture! Circling back to the business feasibility of Blockchain, the solution could be a resounding affirmative.

### **Competency verification-**

+like training and educational certificates - is critically necessary for insecure work like operative machinery or handling hazardous chemicals. However, current traditional certificate verification practices of contacting institution institutions or third-party services are typically long, cumbersome and opaque. These processes also are typically at risk of fraud. A safer, clear, and efficient answer will prove genuineness of skilled credentials and facilitate

observation of fake and fallacious certificates supported blockchain technology.

Blockchain is the backbone Technology of Digital Crypto Currency Bitcoin. The blockchain could be distributed information of records of all transactions or digital events that are dead and shared among taking part parties. every group action verified by the bulk of participants of the system. It contains each single record of every group action. Bitcoin is the most well-liked cryptocurrency, an example of the blockchain. Blockchain Technology initially came to light once an individual or group of individuals named 'Satoshi Nakamoto' printed a study on "Bitcoin: A peer to see electronic money system" in 2008. Blockchain Technology Records group action in Digital Ledger that is distributed over the Network so creating it incorrupt. Something valuable like Land Assets, Cars, etc. is recorded on Blockchain as a group action.

With 20-30% of candidates as well as fallacious references in their resume, it's time that the hour business embraces an additional strong system that guarantees the protection and security of employers and employees, while additionally reducing large overheads. Blockchain offers a secure, fast, and economical solution in reworking BGV processes to fit the digital-first era. worker BACKGROUND CHECK URCET DEPT-CSE three Blockchain allows for fast digitisation of the manual significant background check processes of the past (and present!). With blockchain, the whole resume is held on as a block of data that each one's stakeholders are personal too. Getting data into a blockchain network implies that employers, candidates, and certifying institutes all have access, however solely some have the authority to add/change/validate the info as required. Because the candidate adds data within the individual fields, government organizations are aware about validating criminal background checks, academic

institutes verify degrees, past employers perform reference checks and so on.

## II. Aim of the project

The aim of this project is to solve the problem of certificate verification and stop fraud by users of transparency to the educational system by using blockchain technology. This project is to implement the application of blockchain as a service to implement distributed systems. Using digital signatures, stops fraud by users in the educational system using blockchain.

## III. Objective of the Project

Objective of the Project The objectives of the systems development and event management are.

1. Digital certificates use the digital signature technology to user controls to confirm users' self in the digital branch used to confirm a user's identity and access authorization to the network.
2. It provides clearness for employers for verifying the employee's educational degree and save time for document verification.

## IV. Scope of the Project

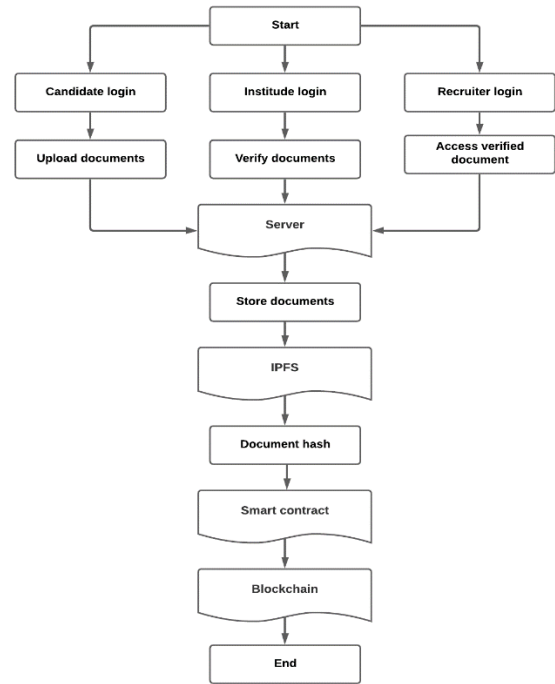
Blockchain industries are growing in many industries and universities in Europe and beyond day by day. Nowadays with the recent revolution in computer science, blockchain is the world economy for the next several decades. According to various analyses about one million graduates passing out each year, it is very difficult for certificate providers to understand the security credentials of student data. Due to lots of fraud, graduation certificates get fake notices. To solve this problem these systems are found even though security issues still exist. Blockchain is one of the most recent technologies that can be implemented for data security. The unmodifiable property of the block chain helps to overcome the problem of certificate

fraud. The project can help in help solve major issues with prevailing with the current system. Blockchain is the underlying technology for this project which will help eliminate third party for the manual verification, and it saves time as the checks can be done instantly and saves money going to the third-party agencies. The issue of security is also resolved because if the current approach is to be done on a traditional Client-Server architecture, concern for security and data privacy arises as all the data is with a single entity. With the Blockchain in picture, the whole system becomes transparent and only the hash of the file gets stored in the server, and only the hash is required to verify the documents which helps in overcoming the concern for data privacy and security..

## V. Proposed system

A blockchain is made wherever universities, students, companies, and certification authorities have the privilege to put in writing the data on to the blockchain. academic Institutions can submit the tutorial details like the name of the program, list of courses taken, and grades of all their students. All the data that we tend to ordinarily realize on Associate in Nursing academic transcript are going to be submitted to the blockchain. firms can submit the work experience details like years of expertise, skillset, and performance ratings of all their employees on to the blockchain. Certification Authority will issue a certificate of finishing a coaching session on a ability. of these documents are going to be verified by Associate in Nursing administrator node before conniving the hash values and saving them to the blockchain. All the transactions (document submissions) ought to have a correct format and digital signature of the structure entity. Otherwise, the dealing is going to be rejected. The administrator of the organization ought to verify and approve the dealing. Once the transaction is approved, the hash worth of the document within the dealing is calculated on with the hash worth of the

identification and sent to the accord mechanism to update the blockchain. The hash worth of the document in conjunction with the hash of the identification is hold on the blockchain. Once the hash values ar hold on the blockchain, they become immutable, and nobody will manipulate them. once the work applier submits his documents to the hiring manager throughout the hiring method, the hiring manager can transfer the documents to the hash admirer net application that runs on the blockchain. The hash admirer application can compare the hash worth of the uploaded document with the hash worth present on the blockchain. If each hash values match, the appliance returns a worth as authentic. Otherwise, it returns a worth expression that the document is pretend. Hence, the hiring manager will simply verify if the documents created by the work applier ar authentic. In the fig.4.1 and fig4.2, the operating the planned resolution will be explained by the Flow Chart and Flow Structure. Flow charts ar diagrams that project a method, in order that you we can simply communicate it to people and use it to outline and analyze a method, build a bit-by-bit image of it, so standardize or improve it. Here, initial candidates should upload documents on the server. This uploaded document verified by the faculty that candidate belongs to. when the verification these documents ar hold on on the IPFS. IPFS 23 returns the document hash to the server and this document hash is hold on within the blockchain network with the assistance of good contract. These documents will be simply accessed by anyone, but the correct authentication is needed. These verified documents ar accessed by the recruiter and check the worker background simply.



## VI. Benefits

**Cost Reduction** In the proposed result, the hiring director needs to pay a significantly low quantum of plutocrat for the verification of each document using the operation. This low- cost background verification process will help the small and medium scale enterprises to corroborate the background details of the job aspirants during the hiring process. Hence, it'll help the companies to elect the truly professed workers during the hiring process.

**Time- Saving** The proposed result is far lower time-consuming than any other background verification systems that live moment. Hiring directors can incontinently corroborate the authenticity of the documents submitted by the job aspirant during the hiring process itself. Utmost of the current background verification processes will take a lot of time, which can delay the hiring process. In some cases, the association starts the verification process after hiring the hand. Also, the companies might lose a lot of plutocrat, time, and coffers by hiring the wrong seeker for the job position.

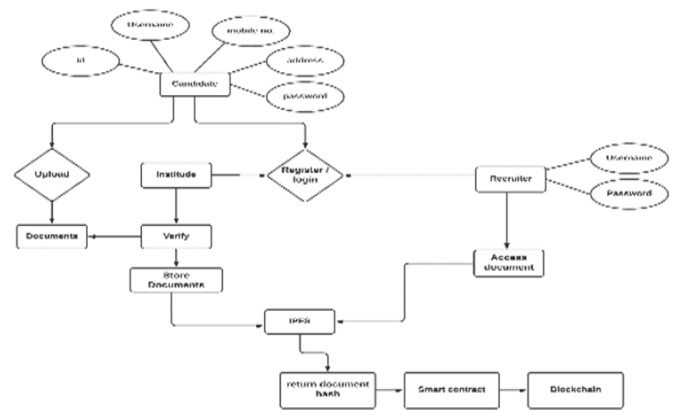
**Effective Process** The proposed result is veritably effective in vindicating the documents handed by the job aspirant. It's virtually infeasible to manipulate a document without changing the hash value of it. The hash values entered in the blockchain can not be tampered. Utmost of the current background verification systems are done manually, which is prone to crimes or manipulations. But our proposed result will work efficiently by prostrating all the problems of the homemade process.

Sequestration Hash value of the documents of the job aspirants on the blockchain is saved rather of the factual documents in the translated form. Hence, all the information about job aspirants is fully secure. Hence, our result will give high sequestration for the information.

This design attempts to ameliorate work history verification by exercising blockchain, an inflexible distributed tally technology which doesn't allow a sale to be modified formerly created. Blockchain is employed to store translated performances of work history as a way of vindicating the data. This system will also allow prospective workers to rush colorful records and shoot that pack to prospective employers, who'll also corroborate each record against the interpretation on the blockchain, while still conserving the sequestration of both parties.

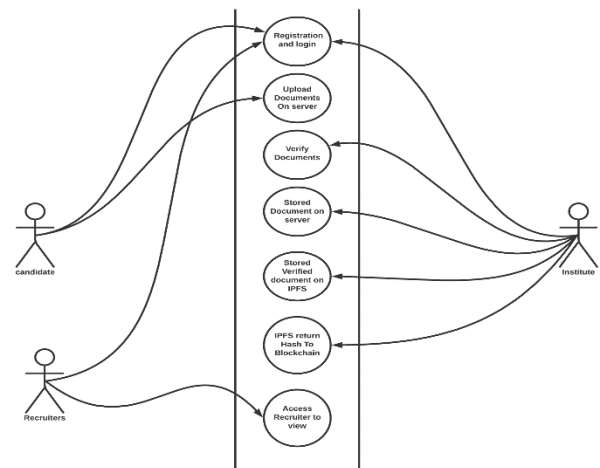
### VII. Design & Implementation

The proposed model for the verification of documents on blockchain has been explained by the following diagram. These diagrams help in understanding the flow of data and model implementation.



In the above Figure E-R model for the project has been explained. The candidate and Institute have login functionality. For this we need to create a table for registration. It has several fields, but we take some important fields here like username, mobile no, address, password etc. After the successful login candidate uploads a document on the server. The Institute verifies documents and upload documents on IPFS. IPFS return the document hash and it is stored on the blockchain network with file name. Then only the recruiter can access the file of the candidate.

Use Case Diagram:



In the above figure, we use the 3 actors that are Candidate, Institute and recruiters. Candidate has several functions like login and upload documents. Institutes verify the documents and upload files on IPFS and store hash on blockchain. Recruiter wants a

candidate file he must download from IPFS from file hash.

### VIII. Technology Used

**JAVA:** Ethereum is built on the core of Java, hence its underlying technology in this project for the blockchain. Solidity, the programming language for the Ethereum programming uses the concept of Java

**Blockchain:** A single block on the blockchain can actually store up to 1 MB of data. Depending on the size of the transactions, that means a single block can house a few thousand transactions under one roof.

**IPFS:** In the proposed model, IPFS will be used to store the hash of the documents so the employer can verify the authenticity of the document by comparing the hash. In blockchain, IPFS is used compared to the SQL Database in the traditional method.

**Ganache:** Ganache would provide the needed coins for doing the transaction in this model. Ganache provides temporary coins because there's a cost associated with each transaction on a blockchain model.

**Solidity:** When deploying contracts, you should use the latest released version of Solidity. This is because breaking changes as well as new features and bug fixes are introduced regularly.

**Metamask:** The application includes an integrated service for exchanging Ethereum tokens by aggregating several decentralized exchanges (DEXs) to find the best exchange rate. This feature, branded as Metamask Swaps, charges a service fee of 0.875% of the transaction amount.

### IX. CONCLUSION

This study identified and discussed the security themes and verifications required for document verification in the blockchain. The proposed solution

is being implement on a public blockchain called Ethereum. The security themes required for educational certificates verification in the blockchain are authentication, authorization, privacy, confidentiality, and ownership. Authentication will prove to the employer that the user is trustful and will be able to verify the claims made by the user. Authorization will ensure that the user has necessary permissions to perform tasks that he/she is entitled to. Privacy and confidentiality will prove that both identity and information exist in the certificate are protected. The Ethereum blockchain also ensures that information held on the blockchain network is encrypted, so that only the certificate owner will see and share that information they need. Finally, educational institutions are ready to partner with other employers and post credentials on the blockchain to stamp out the fake academic certificate. Blockchain technology seems to be a booming application in the recruitment industry. It has a lot of potential for background verification agencies for smooth management, storage, and verification of data and can be utilized for both ends of the hiring process- the employees and the employers.

In the enlistment interaction, it tends to be utilized at numerous levels - to store profiles of competitors, to check the realness of their capabilities and to pursue the ideal choices in light of approved applicant information. The utility of Blockchain innovation in Background Verification is exceptionally urgent in accelerating and getting the general foundation screening process. With Transparency and unchanging nature being the center ascribes of blockchain innovation, it can open worth and advantages for the two managers and workers.

The proposed framework will ensure less manpower and will see greater efficiency in dealing with forged certificates. This will improve the regulation of certificate issuing institutions and ensure the credibility of certificates within the blockchain

network. The proposed system will also ensure verification of records in minimum amount of time and will be a cost-effective solution for the employers as the need for the third-party verification is eliminated from the system.

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