CryptoCred

A Blockchain based certificate generator & validator

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Problem Definition

- Traditional paper-based certificate verification systems are manual and inefficient, especially for institutions with a large number of record.
- A significant increase in instances of certificate forgery has been observed, leading to challenges in distinguishing between genuine and fake certificate
- Many current verification systems rely on Relational Database Management Systems (RDMS), which are susceptible to hacking and compromise due to technological advancements.
- Employers face a high rate of encountering fake certificates, underscoring the pressing need for a more secure and streamlined verification process.
- The limitations of the current paper-based system and the deficiencies in existing digital solutions highlight the demand for a secured online certificate generation and verification system with minimal human intervention.

Introduction

In response to the rising issue of certificate manipulation and forgery, our project introduces a secure certificate generator and validator website. Utilizing blockchain technology the system employs an IPFS component to convert PDF and PNG files into unalterable hashes, securely stored in the blockchain. This approach ensures the integrity of certificates, making it resistant to manipulation while offering a secure and anonymous verification process for everyone.

Background

Traditional paper-based certificate verification systems are increasingly outdated and inefficient, particularly for institutions handling a large volume of records. With the rise in instances of certificate forgery, distinguishing between genuine and fake certificates has become a pressing challenge, necessitating a more secure and streamlined verification process.

Current verification systems often rely on vulnerable RDMS, leaving them susceptible to hacking and compromise. Employers encounter a high rate of fake certificates, underscoring the urgent need for a technologically advanced solution that can address the limitations of paper-based systems and deficiencies in existing digital verification methods.

Review of Literature

Online Certificate Validation Using Blockchain

Shanmuga Priya R, Swetha N

https://www.ijana.in/papers/37.pdf

Generating and Validating Certificates Using Blockchain

T.S.Raja Rajeswari, Sk Khaja Shareef, Sameer Khan, Akhtar Ali

https://ieeexplore.ieee.org/document/9489105

Generating E-Certificate and Validation using Blockchain

Rohan Hargude, Abhijit Nawale, Ghule Ashutosh

https://ijcrt.org/papers/IJCRT2107013.pdf

BLOCKCHAIN BASED CERTIFICATE VALIDATION SYSTEM

Mrs. R. Suganthalakshmi, Mrs. G. Chandra Praba, Mrs. K. Abhirami

https://www.irjmets.com/uploadedfiles/paper/issue_7_july_2022

Feasibility

This approach provides a feasible solution to the challenges posed by traditional paper-based systems and vulnerable digital verification methods.

the integration of blockchain technology and IPFS components offers a practical and scalable solution to the pressing issue of certificate forgery, making the proposed system highly feasible in addressing the current challenges faced by institutions and employers.

Proposed Solution

Simple Interface

Designed user-friendly interface for easy navigation and verification

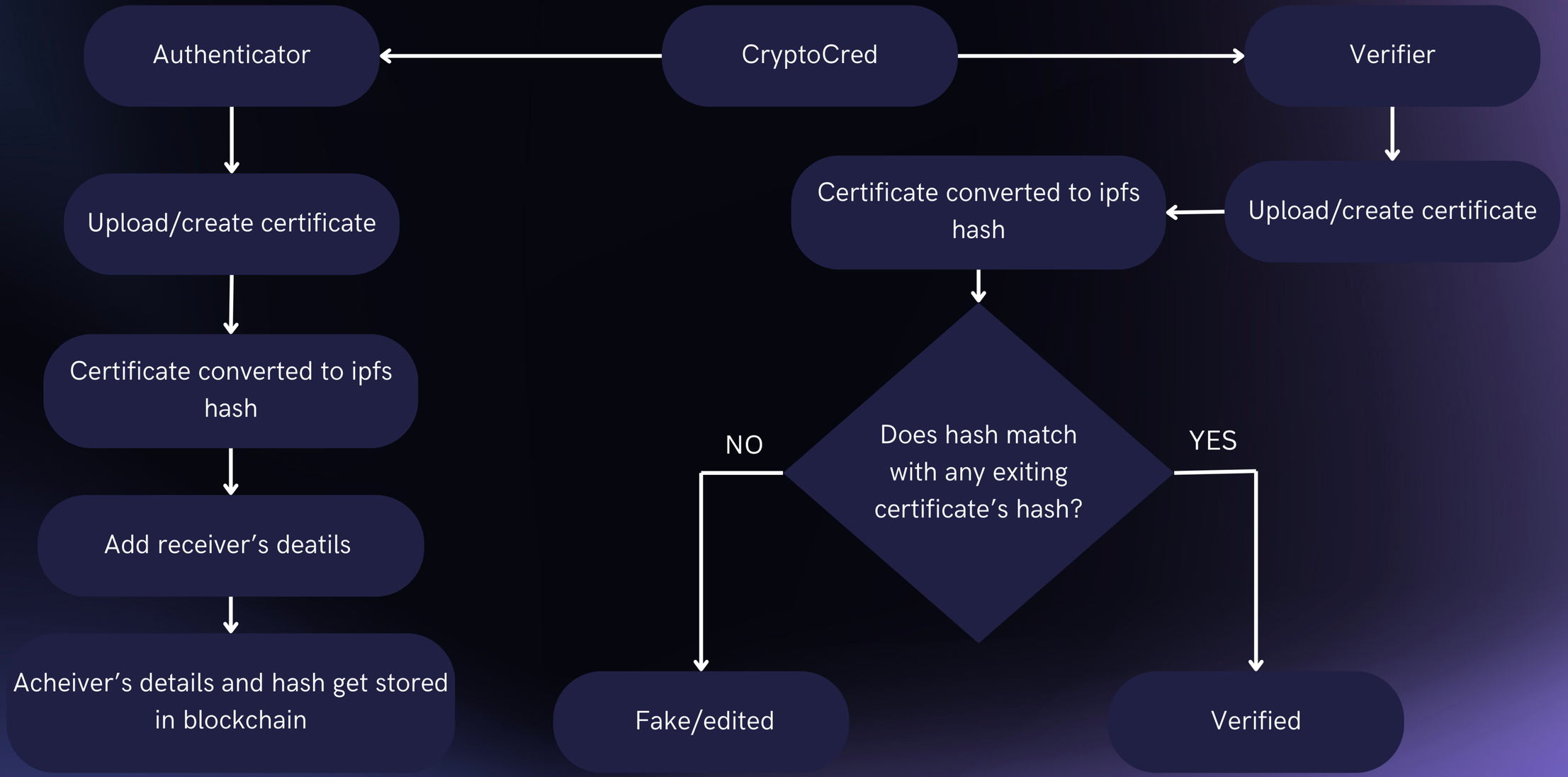
Utilization of Blockchain

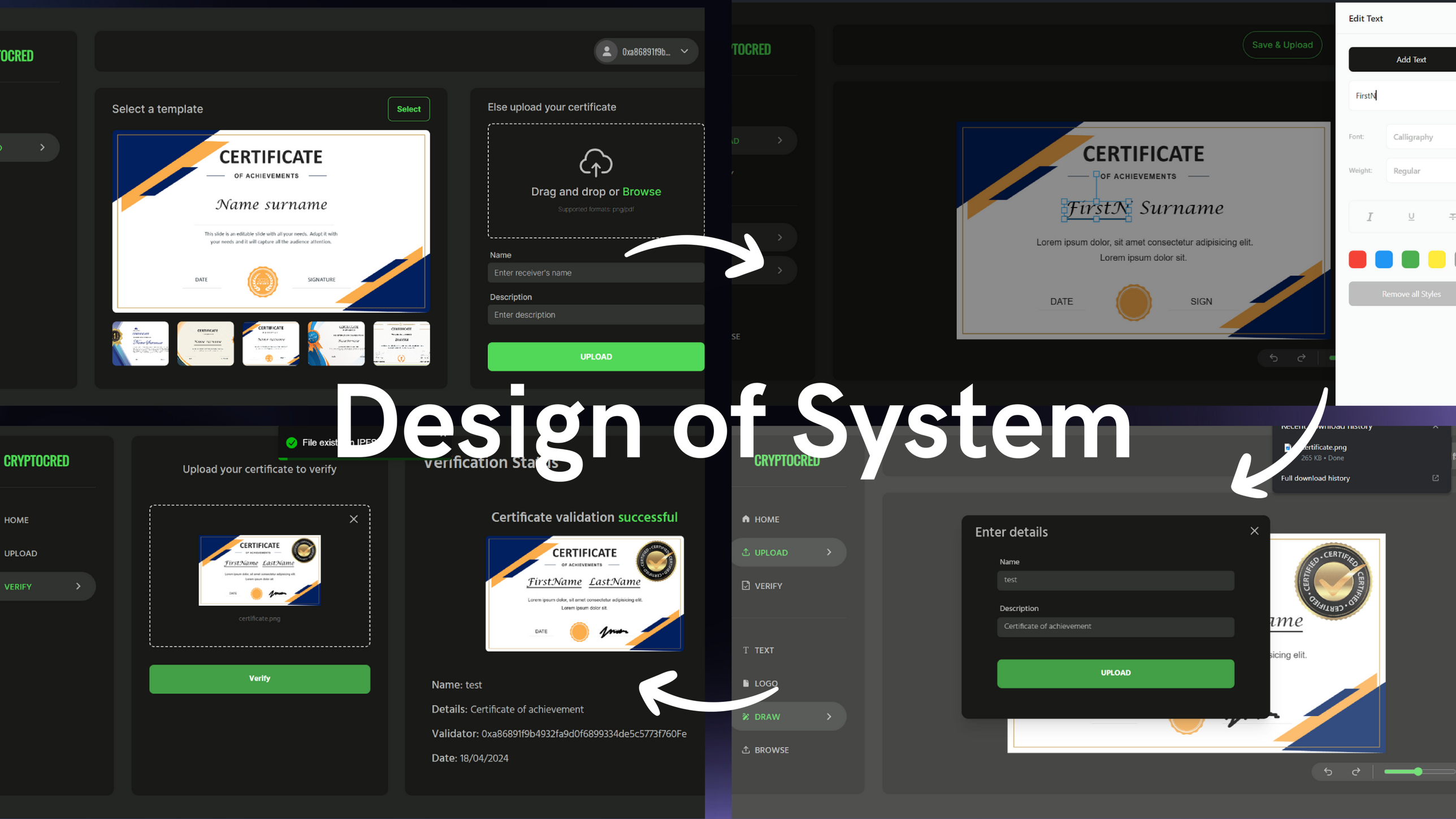
Leverage blockchain for secure certificate storage.

Easy Verification process

Streamlined verification for seamless certificate validation.

Block Diagram




Design of System
Select a template
Select
Else upload your certificate
Drag and drop or Browse
Supported formats: png/pdf
Name
Enter receiver's name
Description
Enter description
UPLOAD
CERTIFICATE
OF ACHIEVEMENTS
Name surname
DATE
SIGNATURE
Edit Text
Add Text
Font:
Calligraphy
Weight:
Regular
Remove all Styles
Save & Upload
FirstN Surname
Lorem ipsum dolor, sit amet consectetur adipisicing elit.
Lorem ipsum dolor sit.
DATE
SIGN
CRYPTOCRED
HOME
UPLOAD
VERIFY
Upload your certificate to verify
certificate.png
Verify
Verification Status
Certificate validation successful
FirstName LastName
Name: test
Details: Certificate of achievement
Validator: 0xa86891f9b4932fa9d0f6899334de5c5773f760Fe
Date: 18/04/2024
TEXT
LOGO
DRAW
BROWSE
Full download history
Enter details
Name
test
Description
Certificate of achievement
UPLOAD

References

- https://docs.soliditylang.org/en/v0.8.25/
  (To learn solidty programming to build smart contract)
- https://docs.ethers.org/v5/
  (To learn etherjs library for connecting smart contract with frontend)
- https://konvajs.org/docs/react/index.html
  (To learn react konvo library for creating interactive canvas for certificate generation)