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ONLINE VOTING SYSTEM USING FACE RECOGNITION AND BLOCKCHAIN

Aditya Sawant[*1], Vishwajeet Khalate[*2], Sanket Paygude[*3], Vishal Tarange[*4], Prof. S.A. Dabahde[*5]

[*1,2,3,4]Student, Department Of Computer Engineering, SVPM College Of Engineering Malegaon(Bk), Maharashtra, India.

[*5]Professor, Department Of Computer Engineering, SVPM College Of Engineering Malegaon(Bk),Maharashtra, India.

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ABSTRACT

Electronic voting (also known as e-voting) refers to voting using electronic means and to take care of the votes given by the user and counting the votes accurately. An e-voting system must be secure, as it should not allow duplicated votes and be fully transparent, while protecting the privacy of the attendees. The disadvantages of traditional voting system are there is no reliability of voting, No assurance that people gave the votes are not changed before they are counted on the system. There is no transparency between the voter and the system. E-voting can be very helpful because everyone can easily access the election and uses his/her votes and declares his/her choice. People can share private hyperlinks to any created poll (as long as they know the link) and people who have the link can vote and one browser can only use one vote. The security here, in terms of voter authentication, duplicate votes and non-repudiation of votes, is very weak. E-voting is being studied extensively, and many implementations are tested and even used for a while. However, very few implementations are reliable enough and are still in use.

Keywords: Blockchain, Distributed System, Electronic Voting System, Candidates, Voters, Face-Recognition, Etc.

I. INTRODUCTION

This project develops a secure online voting system using face recognition for voter authentication and blockchain for tamper-proof vote storage. Face recognition ensures only eligible voters can participate, while blockchain guarantees that votes are recorded transparently and cannot be altered. After facial verification, voters cast their votes, which are stored as immutable transactions on the blockchain. The system enhances election security, transparency, and efficiency, providing a modern solution for remote voting while maintaining voter privacy and trust in the electoral process.

II. METHODOLOGY

- **Voter Registration**: Collect voter details and biometric face data securely.
- **Authentication**: Authenticate voters using face recognition for secure access.
- **Blockchain Integration**: Register each voter on the blockchain to prevent tampering.
- **Face Recognition Model**: Implement a deep learning model to identify unique facial features.
- **Single Vote Enforcement**: Use smart contracts to limit each registered voter to one vote.
- **Secure Vote Casting**: Encrypt and record each vote on the blockchain ledger.
- **Vote Counting Transparency**: Allow real-time, transparent vote counting on the blockchain.
- **Immutability**: Ensure votes cannot be altered or deleted once recorded.
- **Result Verification**: Provide an auditable, tamper-proof ledger for vote verification.
- **Accessible Results**: Share transparent, verified results with voters and authorities

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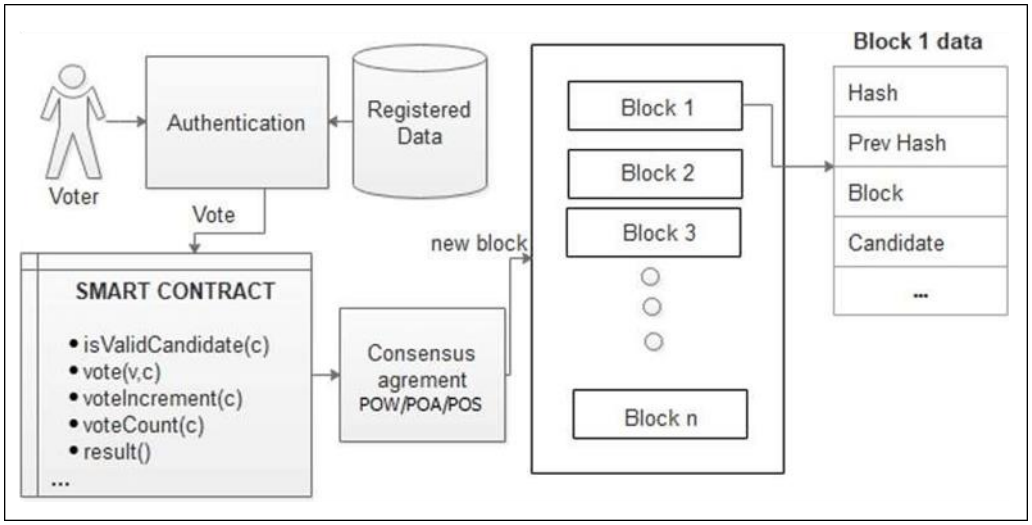

Figure 1: System Architecture.

III. ALGORITHM USED

- **Convolutional Neural Network (CNN)**: CNN is used primarily for **face recognition** to authenticate voters before they cast their votes.
- **Haar Cascade**: The Haar Cascade Algorithm is widely used for real-time object detection, such as face or eye detection in images. It works by applying a cascade of classifiers to rapidly detect objects.

IV. SOFTWARE REQUIREMENT SPECIFICATION

1 User Interface

• User interface of this program is the common windows interface, nothing additional is required.

• The system user interface should be intuitive, such that 99.9

2 Hardware Interface

The hardware should have following specifications:

• Ability to read gallery

• Ability to exchange data over network

• Touch screen for convenience

• Keypad (in case touchpad not available)

• Continuous power supply

• Ability to connect to network

• Ability to take input from user

• Ability to validate user

3 Software Interface

• The software interfaces are specific to the target other user's proposed Application or software systems.

V. PURPOSED OUTCOMES

The proposed online voting system using face recognition and blockchain will deliver a secure, transparent, and tamper-proof solution for modern e-voting needs. By combining biometric face recognition with blockchain technology, the system ensures that only verified voters can participate, eliminating the risks of unauthorized access and duplicate voting. Blockchain's immutable ledger guarantees the integrity and transparency of each vote, allowing real-time tracking and ensuring that results cannot be altered or manipulated. This decentralized approach enhances the reliability of vote counting and provides an accessible platform for voters to participate from any location. Ultimately, the system aims to build public trust in the election process by providing secure, verifiable, and accurate results.

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VI. CONCLUSION

In conclusion, the development of the online voting system utilizing face recognition and blockchain technology demonstrates a promising approach to enhancing the integrity and security of electoral processes. The system not only ensures secure voter authentication but also guarantees the immutability and transparency of votes. By modernizing the voting experience, this project addresses critical challenges in traditional voting methods and encourages greater participation in democratic processes, setting a foundation for future innovations in secure online voting solutions.

VII. REFERENCES

[1] J. Yerramsetti, D. S. Paritala, and Ramesh Jayaraman, "Design and Implementation of Automatic Robot for Floating Solar Panel Cleaning System using AI Technique," IEEE 2021 International Conference on Computer Communication and Informatics (ICCCI), 2021, pp. 1-4,
DOI: 10.1109/ICCCI50826.2021.9402482.

[2] S. L. Rikwith, D. Saiteja, and Ramesh Jayaraman, "Enhancement of Electronic Voting Machine Performance Using Fingerprint and Face Recognition," 2021 2nd International Conference on Smart Electronics and Communication (ICOSEC), 2021, pp. 757-763,
doi: 10.1109/ICOSEC51865.2021.9591895.

[3] Meter, Christian. ”Design of Distributed Voting Systems.” arXiv preprint arXiv:1702.02566 (2017).

[4] Gupta A, Patel J, Gupta M, Gupta H., (2017), Issues and Effectiveness of Blockchain Technology on Digital Voting. International Journal of Engineering and Manufac- turing Science, Vol. 7, No. 1