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Online Voting System Using Face Recognition and Blockchain

Sachin Pache, Tejas Kadam, Anil Palve , Prof. P. Gaikwad
Adsul Technical Campus, Chas, Ahilyanagar, Maharashtra, India

Abstract: *Electronic voting (also known as electronic voting) refers to the use of electronic means to vote and to record and accurately count votes sent by users. Electronic voting systems must be secure, as they must not allow duplicate votes and be completely transparent, while protecting the privacy of participants. The disadvantage of the traditional voting system is that voting is not reliable and voters do not change until they are registered in the system. There is no transparency between the voters and the system. Electronic voting can be very useful because anyone can easily access the poll and cast their vote and express their choice. People can share a private link to the created poll (as long as they know the link) and the person with the link can vote and only one vote can be used per browser. In this proposed system, we design and develop a web-based application using python and flask framework for an online audio system using Face Recognition and Blockchain Technology with a decentralized data storage system.*

Keywords*:* Online Voting System Electronic Voting (E-Voting) Face Recognition Facial Biometric Blockchain Technology

I. INTRODUCTION

Face Recognition Based Voting Project is a application where the user is recognized by his face pattern. Sincethe face pattern of each human being is different, the voter can be easily authenticated. The system allows thevoter to vote through his face recognition. Face print is used to uniquely identify the user. The Face recognitionminutiae features are different for each human being. Face Recognition is used as a authentication of the voters.Voter can vote the candidate only once; the system will not allow the candidate to vote for the second time. Thesystem will allow admin to add the candidate's name and candidate photo who are nominated for the election.Admin only has the right to add candidate name and photo who are nominated. Admin will register the votersname by verifying voter. Admin will authenticate the user by verifying the user's identity proof and then adminwill register the voter. The number of candidates added to the system by the admin will be automaticallydeleted after the completion of the election. Admin must add the date when the election going to end. Once theuser has got the user id and password from the admin the user can login and vote for the candidate who arenominated. The system will allow the user to vote for only one candidate. The system will allow the user to votefor one time for a particular election. Admin can add any number of candidates when the new election will beannounced. Admin can view the election result by using the election id. Even user can view theelection result.

II. METHODOLOGY

SYSTEM ARCHITECTURE

Whenever any transaction will occur in the system , the record of that transaction is maintained in the form ofhash value in a block. Each next block will get attached to the previous block and in this way a virtual blockchain will occur. The hash value of a current block is generated using the data of a current block and the hash ofthe previous block.Such multiple copies are maintained at different servers , which will assure the data securityand confidentiality.
Module

• User Registration Module Purpose: To allow users to register their facial data and other required credentials. Features: Face scan and storage using facial recognition algorithms. User ID generation. Capture and store additional details (e.g., name, age, and voter ID). Secure storage of user data in an encrypted

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database.

• Face Authentication Module Purpose: To authenticate users by verifying their face against stored records.
Features: Real-time facial recognition using a camera. Use of AI/ML models like CNN for face matching.
Liveness detection to prevent spoofing attacks. Multi-factor authentication (optional, e.g., OTP or PIN).

• Voting Module Purpose: To enable authenticated users to cast their votes. Features: Display of election options (candidates or propositions). Secure casting of votes. Prevention of multiple votes per user. Realtimeupdate of votes in the database.

• Admin Module Purpose: To manage the overall system. Features: Add, remove, or update voter records. Set up voting events and configurations. Monitor system status and logs. View and audit results.

• Database Module Purpose: To securely store all system data. Features: Storage of user data (encrypted facial templates and voter details). Voting records. Logs for authentication attempts and voting activity. Backup and recovery mechanisms

III. CONCLUSION

The proposed system will be designed to provide a secure data and a trustworthy E-voting amongst the peopleof the democracy. By adopting authentication in the distribution of databases on e-voting systems one canreduce the cheating sources of database manipulation. This project aims to implement voting result using Faceauthentication from every place of election. Thus we have implemented a prototype web based softwareapplication in Java for application in electronic voting system. We have implemented features such as: 1.Decentralization 2. Face Authentication 3. Hash Algorithm 4. Encrypted Database. Thus it is possible toimplement a transparent efficient anti hacking and corruption less e voting system.

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