AI Based Secured Voting System with Blockchain Mined Data Storage

K. Anu, M.E. Assistant Professor of Computer Science Department,
L. Guru Antony Raj, Student of Computer Science Department,
K. Santhoshkumar, Student of Computer Science Department,
St. Joseph College of Engineering, Sriperumbudur, Chennai

ABSTRACT:

In India, electronic voting is the conventional method for holding elections using Electronic Voting Machines, sometimes known as "EVMs." In the 1990s, the state-owned Electronics Corporation of India and Bharat Electronics developed and tested electronic voting machines. They were gradually implemented in Indian elections between 1998 and 2001. Since 2014, electronic voting machines have been utilised in all Indian general and state legislature elections. In India, the voting procedure is largely manual, with voters queuing in a physical area to cast their votes for their preferred candidates. Without a doubt, a manual voting mechanism does not result in a 100% voting rate. Electronic voting is the most common method of conducting elections, with Electronic Voting Machines (EVMs) being used in some cases.A reactJS-based web application is being created to assess the role of existing political parties and independent candidates in the upcoming state election. The project also assists the common man in filling out a survey with a questionnaire in order to express his or her willingness and opinions on the current/upcoming state election. By providing an e-voting system with Face Detection authentication, this web application also assists the state government in reaching a 100% voting rate in state elections.

Key Terms: E-Voting-Electronic voting, reactJS- react java script, EVM- electronic voting machine

1. INTRODUCTION:

Our project's goal is to create a web application that assists the state government in obtaining a 100% voter turnout in state elections by offering an e-voting system with Face Detection authentication. In India, the voting procedure is mostly manual, with voters queuing in a physical area to cast their votes for their preferred candidates. The project also assists the common man in filling out a survey with a questionnaire in order to express his or her willingness and opinions on the current/upcoming state election. The Election Commission of India is a federal organization established under the provisions of the Constitution and is responsible for overseeing and administering all of India's electoral processes.This body is responsible for ensuring elections are free

and fair, without any bias. Election Commission ensures the conduct of members pre-elections, during elections, and post-elections are as per the statutory legislation.

2.LITERATURE SURVEY:

The paper "A Blockchain-based Traceable Self-tallying E-voting Protocol in AI Era"

[1]by Huilin Li, Yannan Li, Student Member, IEEE, Yong Yu, Member, IEEE, Baocang Wang, Kefei Chen in 2020 proposes thatThe system ensures anonymity of the voter and security of the ballot. Artificial intelligence (AI) has demonstrated huge potential in a variety of real-world applications. However, some significant considerations like fairness, transparency and trustworthiness are still challenging when applying AI to trust-oriented applications such as E-voting.

The paper "Distributed Voting/Ranking with Optimal Numberof States per Node"

[2]by SaberSalehkaleybar, Member, IEEE, Arsalan Sharif-Nassab, and S. JamaloddinGolestani, Fellow, IEEE in 2015 proposes a The system effectively identifies the voting percentages effectively. Considering a network with n nodes, where each node initially votes for one (or more) choices out of K possible choices, we present a Distributed Multi-choice Voting/Ranking (DMVR) algorithm to determine either the choice with maximum vote (the voting problem) or to rank all the choices in terms of their acquired votes (the ranking problem). The time complexity ofthe algorithm is analyzed in complete graphs. We show that the time complexity for both ranking and voting is O(log(n)) for given vote percentages, and is inversely proportional to the minimum of the vote percentage differences among various choices.

The paper "E-voting system evaluation based on theCouncil of Europe recommendations: HeliosVoting"

[3] by Luis Panizo, Mila Gascó, David Y. Marcos del Blanco, José A. Hermida, Jordi Barrat and HéctorAláiz in 2018 proposes The system provides effective evaluation of the current voting mechanisms. Despite the claimed benefits of e-voting initiatives, wider adoption of e-voting mechanisms and implementation processes is slower than expected. Several technical, social, and cultural challenges hinder generabity and applicability of evoting. The ultimate goal of our paper is to conceptually and practically support the gradual, secure and protocolized expansion of e-voting.

The paper "A Smart Contract System for DecentralizedBorda Count Voting"

[4]by SomnathPanja ,Samiran Bag , Feng Hao , and Bimal Roy in 2020 proposes that The system ensures E-voting. In this article, we propose the first self-tallying decentralized e-voting protocol for a ranked-choice voting system based on Borda count. Our protocol does not need any trusted setup or tallying authority to compute the tally. We have implemented our protocol using Ethereum's

blockchain as a public bulletin board to record voting operations as publicly verifiable transactions. The experimental data obtained from our tests show the protocol's potential for the real-world deployment.

3.SYSTEM DESIGN:

The suggested approach addresses the existing system's flaws, such as the lack of a technology solution that can successfully provide a 100% safe voting rate in India. The system does not prioritise raising voter awareness of candidates running for office in their neighbourhood. In India, electronic voting is the conventional method for holding elections using Electronic Voting Machines, sometimes known as "EVMs." In the 1990s, the state-owned Electronics Corporation of India and Bharat Electronics developed and tested electronic voting machines.

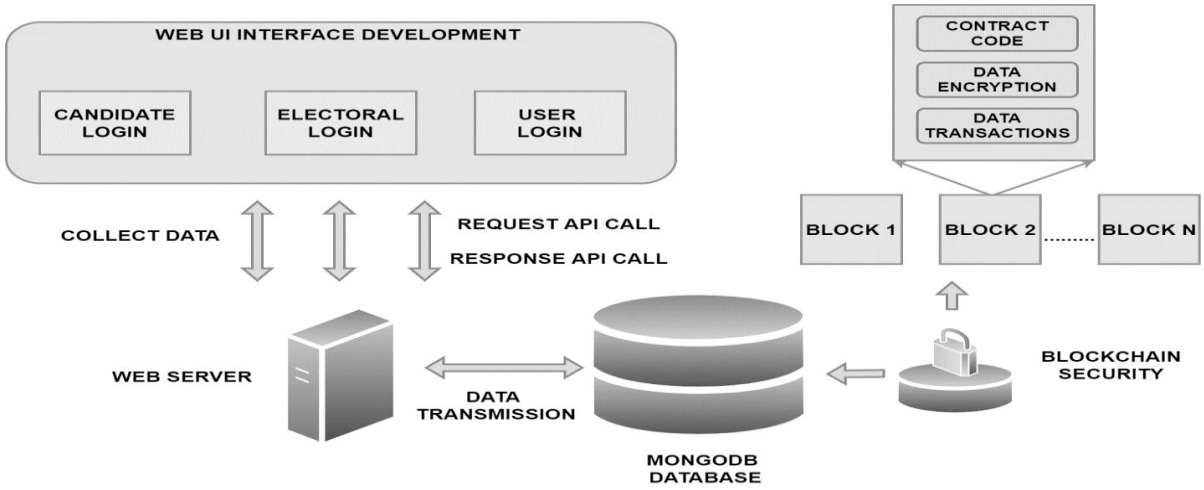

FIGURE 3.1 PROPOSED SYSTEM ARCHITECTURE

4.IMPLEMENTATION:

For Face Detection module, here we are using Haar cascade algorithm. It is an Object Detection Algorithm used to identify faces in an image or a real time video. The algorithm uses edge or line detection features proposed by Viola and Jones in their research paper "Rapid Object Detection using a Boosted Cascade of Simple Features" published in 2001. MongoDB is a source-available cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with optional schemas. MongoDB is developed by MongoDB Inc. and licensed under the Server Side Public License (SSPL).

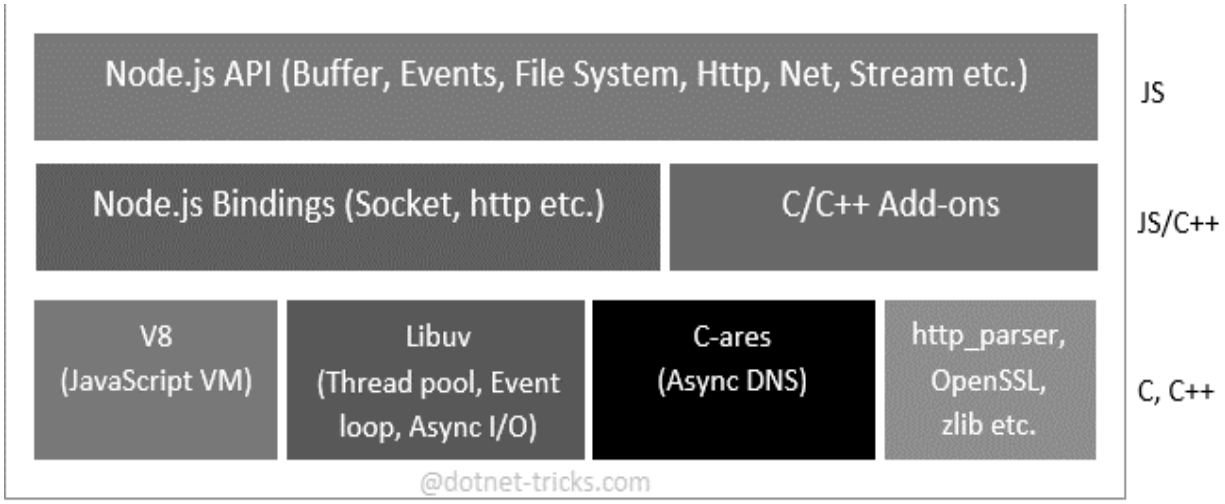

FIGURE 4.1 NODE API INTEGRATION

5. CONCLUSION AND FUTURE ENHANCEMENT:

In this project, we have successfully developed a web application for safe online ballot system which helps the state government in achieving 100% voting rate in the state elections by providing an e-voting system enabling Face Detection authentication. In the proposed system, we have overcome the disadvantages of the existing system to successfully provide a secure technological solution for citizens to cast their votes and ensures 100% voting rate in the country.

In the coming future, we review the application of the project to extensively by the Election Commission of India. In the election commission of India, they are more chance to develop or convert this project in many ways. Thus, this project has an efficient scope in coming future where votes can be cast securely online increasing voter turnout and enhances citizen awareness of the candidates in their locality.

6. REFERENCES:

[1] Christian Galea; Reuben A. Farrugia, “Matching Software-Generated Sketches to Face Photographs With a Very Deep CNN, Morphed Faces, and Transfer Learning”, IEEE Transactions on Information Forensics and Security [Vol no: 13, 2018]

[2] Fáber D. Giraldo; Barbosa Milton C.; Carlos E. Gamboa, “Electronic Voting Using Blockchain And Smart Contracts: Proof Of Concept”, IEEE Latin America Transactions [Vol no: 18, 2020]

[3] Gaurav Goswami; MayankVatsa; Richa Singh, “Face Verification via Learned Representation on Feature-Rich Video Frames”, IEEE Transactions on Information Forensics and Security [Vol no: 12, 2017]

[4] Huilin Li; Yannan Li; Yong Yu; Baocang Wang; Kefei Chen, "A Blockchain-Based Traceable Self-Tallying E-Voting Protocol in AI Era", IEEE Transactions on Network Science and Engineering [Vol no: 8, 2021]

[5] Jiaojiao Zhao; Jungong Han; Ling Shao, "Unconstrained Face Recognition Using a Set-to-Set Distance Measure on Deep Learned Features", IEEE Transactions on Circuits and Systems for Video Technology [Vol no: 28, 2018]

[6] Jiwen Lu; Gang Wang; Jie Zhou, "Simultaneous Feature and Dictionary Learning for Image Set Based Face Recognition", IEEE Transactions on Image Processing [Vol no: 26, 2017]

7.BIOGRAPHY:

Mrs. ANU.KM.E, Assistant professor of computer science Department in St.Joseph College of Engineering completed B.Eand M.E in the Anna University affiliated three conferences.

Guru Antony Raj L Student of Computer Science Department In St. Joseph College of Engineering, Sriperumbudur, Chennai. I Also completed my training on Blockchain Professional course in MSME – Technology Development Centre.I had also attend the conference on blockchain which is conducted by Indian Institute of Technology, Kanpur and E&ICT Academy.

Santhosh Kumar K Student of Computer Science Department In St. Joseph College of Engineering, Sriperumbudur, Chennai. I Also completed my training on Blockchain Professional course in MSME – Technology Development Centre.I had also attended the conference on blockchain which is conducted by Indian Institute of Technology, Kanpur and E&ICT Academy.