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# Online Voting System Using Blockchain Technology

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**ABSTRACT:** Blockchain is becoming the missing puzzle to solve many digital services problems these days. We propose a design and implementation of a Blockchain-based voting system that can be used in elections [1]. We argue that our Blockchain-based electoral system is safer, reliable and it has the power to guard voter privacy which can help boost the number of voters and their trust within the voting system also as reducing considerably the value of national elections. The proposed protocol uses blockchain consensus, blockchain mining, etc.[4]. Compared to other state of the art blockchain-based voting systems, it respects voter's privacy with full transparency for auditing and user-friendly terminals, which can boost the arrogance of people in the voting system and therefore increase the number of participants in the election.

**KEYWORDS:** Blockchain-based voting system, blockchain consensus, blockchain mining.

## I. INTRODUCTION

According to today's social environment a fair and Transparent election has become an intense need for today's society. The current ballot system doesn't offer transparency in counting of votes. There are several threats of voting frauds, like fake voters, frauds within the polling booths etc. So, an intense need for establishment of secure decentralized fraudless, electoral systems came into existence [6]. Electronic decentralized voting systems using blockchain can overcome all the problems in traditional voting systems [8]. Blockchain provides various properties thanks to its decentralized ledger technology. Blockchain is a decentralized computational & information sharing platform which enables multiple authority domains who don't trust one another but they cooperate and collaborate in certain deciding processes. The basic property of blockchain is that it uses add and append only strategy. In

Blockchain we cannot delete the existing data [12]. Blockchain uses peer to peer network systems. Blockchain is a chain of blocks that includes all the information of the user through distributed ledger technology [11]. The concept of block interconnection was evaluated from the Merkle tree by Ralph Merkle. Every node is labeled with a cryptographic hash of a block data. Thereby a non-leaf node is labeled with a cryptographic hash of labels of kid nodes. Hence all the blocks are interconnected. Any change in blockchain can be easily detected [10].

## II. LITERATURE SURVEY

The Borda Count Voting is a self-tallying decentralized e-voting protocol for a ranked-choice electoral system. The protocol doesn't need any trusted setup or tallying authority to compute the tally. The voters interact through a publicly accessible bulletin board for executing the protocol during a way that's publicly verifiable. The voters interact through a publicly accessible bulletin board for executing the protocol during a way that's publicly verifiable. The protocol is not coercion-resistant since a voter can be coerced to vote for a particular candidate and to reveal their secret parameters to prove how they voted. It also has a setback which is partial tallying as there is no tallying authority.

## III. EXISTING SYSTEM

Current online voting system using the threshold cryptography techniques used to distribute this trust among multiple tallying authorities [2]. Their voting has some random number and zero knowledge proofs hide the voter's privacy.

Blockchain in the Internet voting systems use blockchains as ballot boxes [3]. This system is a fully centralized system to make an online voting system.

**Drawbacks of Existing System**

- Tallying authorities collude among themselves altogether, voter’s privacy will be lost.
- These systems depend on trusted authorities to achieve voter’s privacy.

**IV. PROPOSED SYSTEM**

We implement the proposed protocol using the Blockchain in such a way that the blockchain’s consensus mechanism enforces the execution of the voting protocol. We propose a Python based blockchain implementation of our protocol in order to enforce the execution of the voting protocol.

**Advantages of Proposed System**

- This improves the security for voter’s privacy.
- This is an Immutable and decentralised system.
- There will be no third party members involved in this protocol.

**V. SYSTEM ARCHITECTURE**

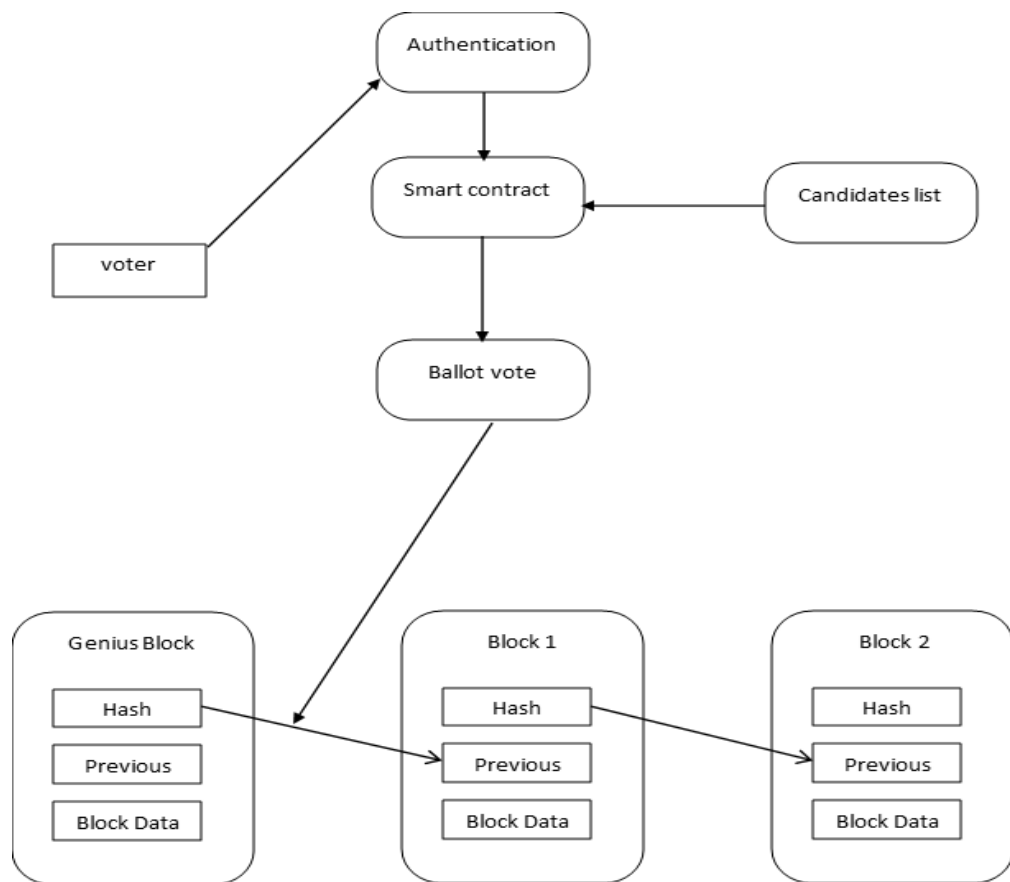


Fig 1. Architecture diagram of the model

## VI. MODULES

1. User Interface
2. Database
3. Authentication Module
4. Block chain creating and mining

### Module 1: User Interface

The Block chain transactions and blocks can be visualized in a user interface[3]. Creating a web interface for scanning and transactions history on user interface[5].

### Module 2: Database

For elections to which they're eligible for, voters can authenticate themselves, load election ballots, cast their vote and verify their vote after an election is over[9]. Voters are often rewarded for voting with tokens once they cast their vote in an election within the near future, which might be integrated with a smart city project.

### Module 3: Authentication Module

This part of the module manages the lifecycle of an election[13]. Multiple trusted institutions and corporations are going to be enrolled with this role. The election administrators specify the

election type and create aforementioned elections, configure ballots, register voters, decide the lifetime of the election and assign permissions nodes [2].

### Module 4: Blockchain Creating and Mining

On start, create the genesis block then the server initiates creation of a new block and sends the required data and creates a new block with the scan data and mines the block.

## VII. CONCLUSION

The main purpose is to make the election a decentralized online voting system which makes the election process cheaper, secured and faster. In this paper we have focused on the blockchain based online voting system that assures cost efficiency, privacy and security to the election process. This election system will provide verification and transparency to voters about their votes.

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